1.0 INTRODUCTION

This report serves as an Addendum to the *Final Alternatives Analysis Report* (FAAR) published in May 2001. The purpose of this report is to document the continued evolution of alternatives that have been considered and evaluated for the Dulles Corridor Rapid Transit Project.

To advance the recommendations of the FAAR, the Virginia Department of Rail and Public Transportation (DRPT), in partnership with the Washington Metropolitan Area Transit Authority (WMATA), and the Federal Transit Administration (FTA), prepared the *Dulles Corridor Rapid Transit Project Draft Environmental Impact Statement and Section 4(f) Evaluation* (Draft EIS) to document the evaluation of alternative transit improvements for the Dulles Corridor. On June 28, 2002, the Draft EIS and the proposed General Plans for the project were made available for public review and comment. The Draft EIS was also circulated to federal, state, and local agencies to solicit comments. Public hearings on the Draft EIS and proposed General Plans were held on July 29, 30, and 31, 2002.

Staff from DRPT and WMATA (the Project Team) accepted written comments for a period of 62 days from June 28, 2002 to August 28, 2002. A summary of the public meetings as well as the comments entered into the public record and their respective responses was published in the *Public Hearings Report* in October 2002. A *Public Hearings Report Supplement* was published in November 2002 to provide responses to comments received after the close of the Draft EIS comment period and responses to those comments received on the *Public Hearings Report*. Based on the analysis contained in the Draft EIS, the input received at the public hearings, and comments received on the Draft EIS, the Commonwealth Transportation Board (CTB) and WMATA Board of Directors selected the Metrorail Alternative on Alignment T6 with Yard Site 15 as the Locally Preferred Alternative in late 2002.

During the preparation of the Draft EIS and the subsequent public review and comment period, the ongoing development and review of alternatives resulted in several design refinements of existing alternatives, as well as the identification of new alternatives. These refinements and alternatives were evaluated using the *Evaluation Methodology* (November 2000) developed for the project, and decisions regarding further analysis were based on the same social, environmental, economic, and transportation factors used for the evaluation documented in the FAAR.

This Addendum presents an overview of the alternatives that were considered as a result of design changes or public comments, presents the evaluation of these alternatives, and outlines the recommendations regarding further analysis. The Addendum also describes the alternatives evaluated in the Supplemental Draft EIS and those carried forward in the Final EIS.

Section 2.0 describes alternatives identified and evaluated after the publication of the FAAR and during the preparation of the Draft EIS. Most of these alternatives were design refinements of existing alternatives.

Section 3.0 outlines alternatives considered after publication of the Draft EIS as a result of comments received during the public review period of the Draft EIS.

Section 4.0 presents the alternatives evaluated in the Supplemental Draft EIS, and introduces the construction phasing proposed for the Locally Preferred Alternative (LPA).

Section 5.0 presents alternatives of three Project facilities as a result of comments received during the public review period of the Supplemental Draft EIS.

Section 6.0 presents the alternatives carried forward in the Final EIS.

Appendix A contains technical memoranda in support of Section 2.0.

Appendix B contains the technical memoranda documenting the evaluation of alternatives considered as a result of public comments on the Draft EIS.

Appendix C contains the technical memorandum in support of Section 4.0.

Appendix D contains technical memoranda in support of Section 5.0.

Appendix E contains a comparison matrix of the Draft EIS Baseline and the Final EIS No-Build.

Appendix F contains the three sets of Final Team Recommendations.

2.0 ALTERNATIVES CONSIDERED BETWEEN PUBLICATION OF THE FAAR AND THE DRAFT EIS

This section provides an overview of alternatives identified between the publication of the FAAR (May 2001) and the Draft EIS (June 2002), and presents a summary of the evaluation results for these options. New alternatives included design refinements of the Bus Rapid Transit (BRT) and Metrorail alignments carried forward from the alternatives analysis process, several new options for the Metrorail Service & Inspection (S&I) Yard, and options for converting the median stations from BRT to Metrorail use. These alternatives are briefly described, and the reasons for carrying particular alternatives forward or eliminating them are summarized. In addition, the issues affecting the selection of the location for the Tysons West Station are discussed.

More detailed analyses are presented in the technical memoranda in Appendix A.

2.1 BRT ALTERNATIVE

Prior to the publication of the Draft EIS, the BRT Alternative carried forward from the alternatives analysis phase was refined to include two additional alignment options. These refinements were developed in response to a request from the Project Steering Committee, which asked that the Project Team examine possible ways to optimize the BRT Alternative under consideration, reducing costs where possible. The Project Team examined different ways to reduce the costs of the BRT Alternative, while still providing improved transportation service in the corridor. As a result, the BRT 2 and BRT 3 alignment options, with fewer median stations and more BRT stops, were developed. All three BRT alignment options are described below.

The BRT alignment originally carried forward (now called BRT 1) extends through the full length of the Dulles Corridor, primarily operating on the Dulles Connector Road, the Dulles International Airport Access Highway (DIAAH), and the Dulles Greenway. The alignment includes six stations and three stops. Five stations (similar to Metrorail stations) are located in the DIAAH median at Spring Hill Road, Wiehle Avenue, Reston Parkway, Herndon-Monroe, and Route 28. All but the Spring Hill Road Station would be convertible to Metrorail stations if Metrorail was later developed in the corridor. A sixth station is located at the existing West Falls Church Metrorail station. Here, passengers would be required to transfer to the Metrorail Orange Line to continue to Arlington and the region's core. BRT stops are located at Dulles Airport, Route 606, and Route 772. At these locations, buses will leave the DIAAH or Dulles Greenway to access "offline" park-and-ride facilities.

BRT 2 is nearly identical to BRT 1, except that it does not include a station or stop at Route 28, and the Spring Hill Road Station is replaced with a BRT stop at the existing Tysons-West*Park Transit Station. Overall, this alignment includes three median stations, one transfer station, and four stops. The median stations for BRT 2 would be a simpler version of those proposed for BRT 1, but would still be convertible to Metrorail stations.

Although all three alignment options were designed to allow for future conversion to Metrorail in the Dulles Corridor, BRT 2 would be closest to the transit system that would be constructed if BRT were to be implemented without any provisions for Metrorail conversion. This is because the stations for BRT 2 are shorter, only including space sufficient to support BRT operations. Converting these shorter stations to Metrorail stations in the future would be more complex than the conversion process for BRT 1.

For BRT 3, most of the median stations in the DIAAH are replaced with BRT stops. The alignment includes only one median station at Reston Parkway. This station is a multi-level station that offers a different conversion approach for later Metrorail use; it would be configured with a BRT platform at ground level, with a Metrorail platform on the level above. For BRT 3, stops would be located at the Tysons-West*Park Transit Station, the Reston East Park-and-Ride (Wiehle Avenue), the Herndon-Monroe Park-and-Ride, Dulles Airport, Route 606, and Route 772. BRT 3 also includes a transfer station at the West Falls Church Metrorail Station.

The evaluation of BRT 2 and BRT 3 indicated that these alignment options would offer cost savings and some constructability benefits. Both options would have fewer median stations than BRT 1, and the median stations proposed for BRT 2 would be simpler than those for BRT 1. These factors lower the capital costs for BRT 2 and BRT 3, and should make them easier to construct. However, the increased complexity in the design of the one median station for BRT 3 could minimize some of the constructability advantages of this alignment.

Although the new BRT alignment options would offer some benefits, they would also be less consistent with local plans than BRT 1, and could reduce ridership for the BRT Alternative. Neither BRT 2 nor BRT 3 include a station or stop in the vicinity of Route 28, a growing activity center in the Dulles Corridor; therefore, they do not support local plans as well as BRT 1. In addition, because BRT 2 and BRT 3 have fewer stations than BRT 1 (eight total, rather than nine) they would attract fewer riders. On the other hand, it was also thought that changes in operating patterns for these alignments could have resulted in more direct service for some trips, which may have ridership benefits.

At the preliminary level of evaluation conducted for the new BRT alignment options, it was difficult to fully assess the likely cost effectiveness of these design variations. Therefore, BRT 2 and BRT 3 were carried forward for full evaluation in the Draft EIS, in addition to the original BRT alignment (now BRT 1), to allow for a wider range of configurations to be examined in detail.

2.2 METRORAIL ALTERNATIVE

Two new Tysons Corner Metrorail alignments were introduced after the publication of the FAAR. Brief discussions of the T9 (Revised) and T9 Design Option alignments are provided below.

2.2.1 T9 (REVISED)

Alignment T9 was initially developed as a design variation of the alignment recommended in the *Dulles Corridor Transportation Study,* a Major Investment Study (MIS) completed in 1997. The Alignment T9 that was originally carried forward from the alternatives analysis process extended through the core of Tysons Corner along Route 7 and 123. This alignment was entirely aerial and included four aerial stations.

Alignment T9 (Revised) is similar to Alignment T9 in several regards. Alignment T9 (Revised) would include four aerial stations at the same locations as those on Alignment T9. Moreover, the revised alignment would have a similar horizontal alignment to that of Alignment T9. The primary difference is that Alignment T9 (Revised) would cross under Route 123 west of the Tysons Central Station, then would run along the south side of the Route 123/Route 7 interchange, rather than extending along the north side of Route 123 and the interchange, as in Alignment T9. Alignment T9 (Revised) would also use narrow track centers and side-platform stations throughout Tysons Corner, rather than at the Tysons Central Station only.

Alignment T9 (Revised) performs well relative to several evaluation criteria. The revised alignment would offer cost savings, enhanced structural efficiencies, and several other benefits such as the reduction of visual impacts on surrounding communities. However, Alignment T9 (Revised) would also have a number of drawbacks including increased right-of-way requirements, and the increased potential for noise impacts in certain residential areas adjacent to the alignment.

The trade-offs of the revised alignment could not be fully evaluated during screening due to the lack of detailed cost and environmental data. However, it was recommended that Alignment T9 (Revised) be carried forward as Alignment T9 for full evaluation in the Draft EIS, replacing the original Alignment T9, and thus allowing for a wider range of configurations to be examined in detail.

2.2.2 T9 DESIGN OPTION

The T9 Design Option is a variation of Alignment T9 located within the Tysons Corner section of the Dulles Corridor Rapid Transit Project. The T9 Design Option would be collocated with VDOT's planned improvements for the I-495/Route 123 interchange, having a higher vertical profile between the Tysons East and Tysons Central stations than Alignment T9; this profile would be identical to that for Alignments T1 and T6. Also, the T9 Design Option would not conflict with proposed improvements for the Route 7/123 interchange.

Rather than passing under Route 123, the T9 Design Option would include a tunnel segment that would run along the north side of Route 123, similar to the tunnel for Alignments T1 and T6. The tunnel would surface east of the Route 7/Route 123 interchange, further west than that for Alignment T9. The design option tunnel would still be shallower than the tunnels for Alignments T1 and T6.

Both Alignment T9 and the T9 Design Option would include a Tysons Central 123 Station and a Tysons Central 7 Station. As with Alignments T1 and T6, the Tysons Central 123 Station for Alignment T9 would be located at the intersection of Route 123 and Tysons Boulevard and would be partially elevated and partially on retained fill. However, for the T9 Design Option, the station would have a dual side-platform configuration rather than a center-platform configuration. Additionally, because the T9 Design Option would involve cut-and-cover construction adjacent to but not crossing under Route 123, it would be less disruptive during construction than Alignment T9, which would have a skewed cut-and-cover crossing of Route 123.

Because the T9 Design Option would be more consistent with proposed roadway plans in Tysons Corner than T9, and because it would be less disruptive during construction, the T9 Design Option was carried forward and evaluated alongside Alignment T9 in the Draft EIS.

2.3 PHASED IMPLEMENTATION ALTERNATIVE

In the FAAR, the three Build Alternatives carried forward for evaluation in the Draft EIS were envisioned as three construction stages in a phased implementation program. The BRT Alternative would be constructed first; then Metrorail would be constructed from the Orange Line through Tysons Corner, connecting to BRT service between Tysons Corner and Loudoun County; and finally, Metrorail would be constructed between Tysons Corner and Loudoun County, replacing BRT service in the corridor. Although the three Build Alternatives were to be evaluated as stand-alone alternatives, it was initially proposed that the overall project move forward with the phased approach.

As work on the Draft EIS progressed, it was decided to evaluate the phased implementation program as a fourth Build Alternative, called the Phased Implementation Alternative. A key element of this alternative were the DIAAH median stations, which were to be constructed during the BRT phase for BRT use, then later converted to Metrorail stations for Metrorail use.

The Project Team explored seven concepts for converting the median BRT stations to Metrorail stations. All of the concepts focused on two primary issues: (1) the platform height required to facilitate level boarding for BRT and Metrorail; and (2) the desire to maintain BRT service to the extent possible during Metrorail construction, start up, and testing.

In order to convert the median BRT stations for Metrorail use, it was necessary to develop a concept that reconciled the difference in height between the standard Metrorail platform and the lower BRT platform. This is because Metrorail vehicles have a floor that is approximately 3-feet, 4-inches above the top of the Metrorail and the BRT buses would have a floor approximately 12 to 15 inches above street level. Due to the construction and start-up schedule for Metrorail, joint-use guideway areas and other station elements could be unavailable for BRT use for a period up to 15 to 18 months prior to the implementation of Metrorail service. BRT stations would not be closed during this conversion period; alternative service would be provided to the station facilities on the north and south sides of the DIAAH and Toll Road. However, several station concepts were designed in an attempt to reduce this period of down time.

The Project Team assessed the potential station configuration concepts based on three main evaluation criteria:

1) Minimize downtime during conversion;

2) Limit BRT station width to a maximum of 80 feet so as to avoid additional widening of the DIAAH or Dulles Toll Road; and

3) To the extent feasible, preserve MWAA's ability to construct and operate future third lanes of the DIAAH independently of the Dulles Corridor Rapid Transit Project. In order to meet this criterion, overall station widths of 60 feet or less are necessary.

The following is a summary of the evaluation results (see Appendix A for a more detailed discussion of each concept):

- Concept #1 – BRT Guideway on Fill. This concept would meet the station width criteria, but would have high downtime during conversion. The BRT operation of median stations would be displaced during Metrorail conversion. This concept would have a relatively low conversion cost because the entire Metrorail platform would be constructed during the initial buildout.

- Concept #2 –Shared Guideway on Street Track. This concept would meet the station width criteria and would have moderate downtime during conversion. It would permit BRT service with limited off-hours Metrorail testing and startup. To provide an adequate driving lane for BRT vehicles, a reduced platform width and/or reduced bus speeds and/or use of a bus guidance system would be required.
- Concept #3 – Separate Guideways with Retractable Boarding Bridges. This concept would not meet the station width criteria, but would have low downtime during conversion. It would permit BRT service with limited off-hours Metrorail testing and startup. This concept could not be implemented at Reston Parkway or Route 28 stations due to vertical profile issues. In addition, the daily deployment of bridges over the Metrorail guideway would be labor and time intensive.
- Concept #4 – Side Platform with Shared Guideway. This concept would meet the station width criteria and would have moderate downtime during conversion. It would permit BRT service with limited off-hours Metrorail testing and startup, and would allow use of right-door BRT vehicles without crossover operations. To provide an adequate driving lane for BRT vehicles, a reduced platform width and/or reduced bus speeds and/or use of a bus guidance system would be required. In addition, the side platform configuration would have higher construction and operating costs.
- Concept #5 – Side Platform with Separate Guideways. This concept would not meet the station width criteria, but would have low downtime during conversion. The configuration would permit BRT service with largely independent Metrorail testing and startup. The concept favors left-door BRT vehicles. The side platform configuration would have higher construction and operating costs.
- Concept #6 – Center Platform with Bypass Lane. This concept would meet one but not both station width criteria, and would have high downtime during conversion. The median operation of stations would be displaced during Metrorail conversion. The primary advantages of this concept are improved operational flexibility and failure management (in all other schemes, a disabled bus would obstruct the entire inbound or outbound guideway within the station). However, these operational advantages are less important to the Project, since the BRT operating plan is headway-based rather than time-point service.
- Concept # 7 – Bi-level Station. This concept would meet the station width criteria and would have virtually no downtime during conversion. This configuration eliminates the need for displacement of median operations during conversion, but would have significantly higher construction costs (approximately 60 percent greater than median stations with an at-grade Metrorail platform).

Concept #1, BRT Guideway on Fill, was the preferred approach for converting the median stations from BRT to Metrorail use and was carried forward for further evaluation in the Draft EIS as part of the BRT 1 and BRT 2 alignment options. For this concept the 600-foot station platform would be built as a permanent Metrorail platform, three feet four inches above the future top of Metrorail. To accommodate BRT service, temporary fill would be constructed in the track bed to raise the driving surface to approximately 1 foot below the top of the platform. Although this concept would require that the BRT median operation of stations be displaced during conversion, it would not require the relocation of the DIAAH or Dulles Toll Road. Additionally, it would not limit MWAA's ability to construct and implement the proposed third lane of the DIAAH at any time.

In addition, because Concept #7 met all three evaluation criteria—although at a significantly higher cost—it was carried forward as part of the BRT 3 alignment option. The Reston Parkway Station described for BRT 3 in Section 2.1 uses this configuration.

2.4 ANCILLARY FACILITIES

The Metrorail Service and Inspection (S&I) Yard is a critical element of the Metrorail Alternative. Such a facility is typically located at or near the end of the Metrorail line, and in this case would need to be sufficient size to store, inspect, and service 184 Metrorail cars, with the potential to accommodate 250 Metrorail cars. Sufficient capacity does not exist within the completed Metrorail system to store and maintain the new cars needed for the Dulles Corridor Rapid Transit Project. As part of the alternatives analysis process documented in the FAAR, a total of 13 sites were evaluated for the S&I Yard and a BRT Maintenance and Storage Facility (MSF). Based on that process, Site 7 in Loudoun County was selected for the S&I Yard site, while Site 14 on Dulles Airport property was selected for the BRT MSF. Both of these sites were carried forward for full evaluation in the Draft EIS.

At the request of the project Steering Committee, a supplemental Metrorail yard study was conducted between December 2001 and March 2002 to consider six additional sites. The supplemental study was needed because of approved changes to the *Loudoun County Revised General Plan*, which stated that a conditional Transit-Related Employment Center (TREC) or special activity destination is planned for Site 7. The plan identifies that the conditional TREC is intended to provide compact, high-intensity employment uses and/or special activity use (i.e., a professional sports stadium), with a support retail and service component.

Four of the six additional sites selected for the supplemental study were located on Dulles Airport property, and the remaining two sites were located elsewhere in Loudoun County. A Technical Memorandum presented in Appendix A provides a more detailed analysis for each of the sites studied. A summary of the findings is presented below:

- Site 15 is on Dulles Airport property near the approach zone of existing and future runways. This site would have minimal effects on wetlands and water resources. While Site 15 would not be consistent with the Airport Land Use Plan, MWAA stated that, of the other sites located on airport property, Site 15 would be the most compatible and could potentially act as an airport buffer.
- Site 16 is on the south side of Route 606 and owned by the National Oceanic and Atmospheric Administration (NOAA). A Metrorail yard at this site would not be compatible with plans to continue using the site as a weather station for the Washington, D.C. area.
- Sites 18 and 19 are also on Dulles Airport property. A Metrorail yard at these sites would not be compatible with the existing Dulles Airport Land Use Plan and the future plan for public parking on these sites.
- Site 20 is on the north side of Route 606. Use of this site would have minimal effects on wetlands and water resources, but would be inconsistent with current Loudoun County zoning and future planned land use.
- Site 21 is located in the southwest quadrant of the Dulles Greenway/Route 606 interchange. Use of this site would result in extensive, avoidable impacts on wetlands and important water resources in Loudoun County.

Based on the screening analysis, Site 15 and 20 were carried forward for full evaluation in the Draft EIS, in addition to Sites 7 and 14.

2.5 TYSONS WEST STATION LOCATION

The site selection for the Tysons West Station and its intermodal transfer facility has been addressed in numerous studies, all of which agree that the principal criteria for identifying the optimum station location were (1) to provide maximum access to jobs and other activities in Tysons Corner, and (2) to foster additional transit-oriented development in the vicinity of the station. These reports, published between 1997 and 1999, proposed various locations for the Tysons West Station, including:

- Route 7 and Westwood Center Drive (a particular intersection quadrant was not specified);
- Fronting the Moore Cadillac property, with the station platform immediately west of the Route 7/Tyco Road intersection; and
- In the median of the DIAAH and Route 7 (for Metrorail, or for a temporary BRT/Metrorail transfer station).

In 2000, the project developed a platform location between Tyco Road and Spring Hill Road, as this location would provide greater opportunities for pedestrian access and transit-oriented development. The proposed park-and-ride structure was sited at the north corner of Tyco Road and Route 7 since the existing low-intensity land uses would provide the best potential for transit-oriented redevelopment or joint development on Route 7 in this area. The location of the station platform and park-and-ride structure, as developed, was carried forward for detailed evaluation in the Draft EIS. Plans for the in-median BRT/Metrorail transfer facility were discontinued in February 2001. The facility was collocated with the proposed park-and-ride structure, and was carried forward for detailed evaluation in the Draft EIS.

3.0 ALTERNATIVES CONSIDERED BASED ON PUBLIC COMMENT ON THE DRAFT EIS

This section provides an overview of new alternatives identified during the Draft EIS public comment period, and presents a summary of the evaluation for these options and recommendations regarding further analysis. More detailed analyses are presented in the technical memoranda presented in Appendix B.

3.1 DULLES PLAN B

Dulles Plan B is a proposal put forth by several citizens in the project area. This proposal was submitted during the public comment period following publication of the Draft EIS. In essence, the Dulles Plan B proposal represents a modified version of alternatives already studied in detail in the Draft EIS. The Dulles Plan B proposal contends that a combination of BRT and increased use of the high-occupancy lanes along the Dulles Toll Road could meet the projected demand for transit in the corridor at a much lower cost than Metrorail. The proposal also suggests the implementation of several forms of "private transit," including just-in-time ridesharing (i.e., casual carpooling, slug lanes) and high-occupancy toll lanes.

The Project Team reviewed the range of alternatives proposed on the Dulles Plan B website, but did not recommend the alternative for further study. Although Plan B was not studied in the same level of detail as the Build Alternatives in the Draft EIS, the objections of the proponents were addressed point-by-point in the *Public Hearings Report* (October 2002) and in a detailed response appended to the *Public Hearings Report*. This detailed response is attached in Appendix B. The response addresses the range of alternatives proposed in Dulles Plan B, as well as several assertions made on the website regarding the costs, capacity, and abilities of BRT and Metrorail.

A brief summary of the primary findings of the Dulles Plan B evaluation follows.

Increased HOV Use. Increased use of the HOV lanes could have benefits for the Dulles Corridor, although such an increase would not dramatically increase the person-moving capacity of the corridor. As shown in Table 6.2-1 on Page 6-23 of the Draft EIS, projected use of the HOV lanes on the Dulles Toll Road is not expected to change from current usage, either under the Baseline or the Build Alternatives, while traffic in the general purpose lanes will increase, exceeding the capacity of these lanes. If travelers who currently use the general purpose lanes could be encouraged to rideshare, then demand for the general purpose lanes could be reduced by up to 1,400 vehicles.

Combined BRT and Increased HOV Use. The proposed combination of BRT with increased vehicle capacity and increased use of the HOV lanes would provide enough capacity to support the projected demand for Metrorail, if all new HOV users are travelers that formerly drove alone.

Transportation systems must be designed to support the demand expected during the "peak of the peak," even though this may result in under-utilization of capacity for the rest of the peak period. For Alignment T6 (the alignment with the highest ridership), this "peak of the peak" demand requires that the system have enough capacity to support 7,540 passengers in the peak direction, in the peak hour for operations in the corridor.

Increasing the size of the BRT vehicles to 80-foot, 80-seat bi-articulated buses would provide for a maximum person-moving capacity of 6,400 passengers in the peak hour in the peak direction (based on 80 buses an hour, which results in a bus running in the guideway every 45 seconds, on average).

Increasing the use of the HOV lane to its maximum capacity under "ideal usage" conditions, would increase the person-moving capacity of the corridor by 1,584 passengers in the peak hour in the peak direction. If it is assumed that all the new HOV users come from the general purpose lanes (rather than switching from BRT or other transit modes), then this increased HOV use, when combined with the BRT capacity, would provide enough capacity to meet peak Metrorail demand.

However, it is very unlikely that incentives to increase HOV use would appeal only to people who previously used the general traffic lanes. It is much more likely that some of the new HOV users would be persons that would have otherwise used the transit system, reducing rather than enhancing demand for transit in the corridor.

Moreover, capacity is not what truly limits the ability of BRT in the Dulles Corridor to serve the same level of demand as Metrorail. BRT would not have the same "drawing power" as Metrorail because of a combination of other factors:

- BRT forces travelers bound for Arlington County and the core to transfer at the Orange Line (or at Tysons West for BRT/Metrorail).
- BRT does not provide a direct connection to Tysons Corner. It requires travelers to transfer to another feeder system before reaching their final destination in Tysons Corner.

The combined effect of these factors is evidenced in both the overall ridership totals for BRT versus Metrorail (see Draft EIS Table 6.3-8), as well as in the projected line loads for the existing Orange Line under the BRT Alternative (see Draft EIS Table 6.3-10, which shows estimates of actual hourly loads, not equivalent hourly passenger flow for the peak half-hour). While under the Metrorail Alternative the maximum loads on the Orange Line Vienna service are less than those for the Baseline, under the BRT Alternative the maximum loads on the Vienna service are more than those for the Baseline. A major reason for this effect is that under the BRT Alternative, people traveling to Arlington County and the core would continue to drive directly to Metrorail at Vienna, Dunn Loring, and West Falls Church rather than board the BRT closer to home and then transfer to Metrorail.

Private Transit. The other proposed "private" transit modes are either not feasible, or would not be as beneficial as suggested in Dulles Plan B.

Numerous issues are associated with incorporating just-in-time ridesharing zones near BRT stations. Access for the zones would have to be provided from either the DIAAH, the inner edge of the Dulles Toll Road, or the outer edge of the Toll Road. Each configuration has issues that would make the provision of access either impractical, infeasible, unsafe, and/or costly. Moreover, due to liability risks, neither the Project Team nor VDOT could develop facilities with the express purpose of encouraging just-in-time ridesharing. While these agencies recognize the benefits that have been gained in the I-95/I-395 corridor through this informal ridesharing arrangement, the random pairing of drivers and passengers inherent in this form of commuting presents risks for which most public agencies are not prepared to assume responsibility.

Similarly, numerous physical, technological, and social issues may limit the ability to implement high-occupancy toll lanes in the Dulles Corridor. In addition, high-occupancy toll lanes may not have substantial mobility benefits in the corridor. If solo drivers were allowed to use the HOV lane for a fee, then it is very likely that a large percentage of the HOV lane users in the Dulles Corridor would be single-occupant vehicles, reducing the average vehicle occupancy in the HOV lane. Therefore, increased use of the HOV lane under a high-occupancy toll system would result in minimal increases in the lane's person-moving capacity, and could result in a reduction in the lane's person-moving capacity.

3.2 METRORAIL ALTERNATIVE

This section identifies and summarizes the analysis of three new Metrorail alignments that were suggested by citizens during the Draft EIS public comment period.

3.2.1 ALIGNMENT T12

Alignment T12 would be a split-service alignment, with one branch extending along the DIAAH on the north side of Tysons Corner, and a second branch penetrating the core of Tysons Corner. The branches would diverge at the eastern edge of Tysons Corner, in the vicinity of the Dulles Connector Road/Route 123 interchange, and would converge again at the western edge of Tysons Corner, in the vicinity of the Dulles Toll Road/Route 7 interchange. The north branch of Alignment T12 (or the "express" leg) would be constructed first; allowing service to the remainder of the corridor to begin while construction of the south branch (or "local" leg) is completed.

The express leg of the alignment would include one station in the median of the DIAAH near the Spring Hill Road interchange. The station would be in the same location as the median station proposed for the BRT 1 alignment evaluated in the Draft EIS, and would include a pedestrian bridge connection to the existing Tysons-West*Park Transit Station in Tysons Corner. It is assumed that the Spring Hill Road Station would remain in operation after the construction of the Tysons Corner segment to allow for the provision of direct express service to Dulles Airport and Loudoun County.

The local leg of Alignment T12 would follow one of the four Metrorail alignments evaluated in the Draft EIS. Although Alignment T6 is depicted in Figure 1 of the technical memo presented in Appendix B, any of the proposed Tysons Corner alignments (T1, T6, T9, or T4) could be combined with the express leg.

Overall, Alignment T12 did not perform well when measured against several evaluation criteria. The alignment would have greater costs and impacts than the alternatives considered in the Draft EIS, would not effectively serve corridor activity centers, and would likely result in ridership reductions. In addition, the service associated with the alignment would be difficult to integrate with operations along the rest of the Metrorail system and with VDOT's expansion plans at the Capital Beltway/Dulles Toll Road/Connector Road interchange.

The evaluation indicates that, relative to the alternatives previously considered in the Draft EIS, Alignment T12 would have numerous deficiencies:

- The additional tracks for Alignment T12, as well as the two Metrorail "interchanges" (i.e., the points where the express leg and the local leg diverge and converge) and the additional station at Spring Hill Road would increase costs above those for Alignments T1, T6, T9, and T4. Although it would remain, the investment in a station at Spring Hill Road would be lost once the Tysons Corner "local" leg of the alignment was complete.
- The shifting of the roadways that would be required to ensure the express leg would be compatible with interchange plans at the Capital Beltway and the Dulles Connector Road would have substantial impacts.
- Given that the overall demand for service between select locations in the central and western portions of the corridor and the core is not significantly greater than the demand for service to and from Tysons Corner, there is little benefit to extending service to the remainder of the corridor before providing service through the core of Tysons Corner.
- An express service from the western end of the corridor to the region's core would offer little time savings benefits, and would degrade the frequency of service to Tysons Corner. When combined with the potential increase in wait time that the split service would cause, Alignment T12 would likely reduce overall ridership on the Dulles Corridor line.
- Split service operations could result in train "bunching" where the Dulles Corridor line meets the Orange Line, or could decrease service frequency through the western end of the corridor.

Given that it would have greater costs and fewer benefits than alternatives previously considered in the Draft EIS, Alignment T12 was not recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process.

3.2.2 ALIGNMENT T13

Alignment T13 would be located within the Tysons Corner section of the proposed Dulles Corridor Rapid Transit Project. It is a variation of the Tysons Corner alignments evaluated in the Draft EIS.

Alignment T13 would be an entirely underground variation of Alignment T6, one of four Metrorail alignments evaluated in the Draft EIS. Alignment T13 would transition to a tunnel in the median of the Dulles Connector Road, west of Magarity Road. The alignment would then continue underground through Tysons Corner, resurfacing west of Tysons Corner in the median of the Dulles Airport Access Road near the Route 7/Dulles Toll Road interchange. Alignment T13 would include four underground stations at the same locations as the four stations proposed for Alignment T6.

As shown in the screening evaluation in Appendix B, Alignment T13 did not perform well relative to several evaluation criteria. Overall, because Alignment T13 would be completely underground through Tysons Corner, draft cost estimates prepared by the Project Team indicate that it would cost $3.5 billion, which is approximately $422 million higher than the cost for Alignment T6. Alignment T13 would also have a greater potential for cost escalation than other alignments evaluated in the Draft EIS because underground construction poses risks that cannot be completely identified prior to construction. Most of the significant risks relate to unknown subsurface conditions such as soil conditions, utilities, hazardous materials, and archaeological resources. Additionally, because Alignment T13 would have the same number stations as Alignments T6 and T9, in approximately the same locations, it would be expected to have the same ridership as the alignment options.

The primary reason for locating an alignment underground is to avoid impacts related to visual quality, noise and vibration, and conflicts with existing infrastructure. Although Alignment T13 would mitigate the visual and noise effects associated with Alignments T1, T6, and T9, these effects could be mitigated through much lower cost mechanisms.

Given that it would have greater costs than alternatives previously considered in the Draft EIS, with no additional transportation service benefits, Alignment T13 was not recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process.

3.2.3 ALIGNMENT T14

Alignment T14 is located within the Tysons Corner section of the Dulles Corridor Rapid Transit Project. It is a variation of the Tysons Corner Alignment T4 evaluated in the Draft EIS.

Unlike Alignment T4, which is an entirely aerial loop through Tysons Corner, Alignment T14 would include two short underground segments, one along each leg of the loop. The northern leg of Alignment T14 would transition to a tunnel along Westpark Drive, between Park Run Drive and International Drive, and would then continue underground to a point between Greensboro Drive and Route 7. The southern leg of the alignment would include a tunnel extending from the Tysons Central 123 Station to just east of the Route 7/123 interchange. The alignment would include six stations at the same locations as those proposed for Alignment T4; however, for Alignment T14, the Tysons Central B station would be underground.

As shown in the screening evaluation provided in Appendix B, Alignment T14 would reduce the visual impacts of alternatives previously considered in the Draft EIS, but would have greater costs, increased risks, no additional ridership benefits, and the same operational complexities. Draft cost estimates prepared by the Project Team indicate that Alignment T14 would cost $3.174 billion, or $94.1 million more than Alignment T4, and approximately $73 million more than Alignment T6 (the most expensive Metrorail alignment option). Alignment T14 would also have greater potential for cost escalation than Alignment T4 because underground construction would pose risks that cannot be completely identified prior to actual construction.

As noted, Alignment T14 would have the same operational complexities as Alignment T4. Alignment T14 would reduce the ability to maintain service during an emergency or disruption along the Metrorail line. As discussed in the Draft EIS, in the event of an emergency or operational problem in Tysons Corner, it would be more difficult to maintain Metrorail service with Alignment T4 than for other alignments because of Alignment T4's divergent, single-track configuration. For this alignment, a disruption along one of the single tracks in the core of Tysons Corner would shut down service to two stations. Patrons would need to be bused to and from nearby stations to maintain service.

Given that Alignment T14 would present one of the few viable approaches for mitigating some of the visual effects associated with Alignment T4, it was recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process should Alignment T4 be carried forward as the Locally Preferred Alternative.

(Note: In December 2002, the WMATA Board of Directors and the Commonwealth Transportation Board selected Alignment T6 as the Locally Preferred Alternative; therefore, Alignment T14 was not evaluated further.)

4.0 ALTERNATIVES EVALUATED IN THE SUPPLEMENTAL DRAFT EIS

This chapter provides brief introductions to the alternatives being examined in the Supplemental Draft EIS: the No Build Alternative, the Metrorail Alternative previously evaluated in the Draft EIS, and the Locally Preferred Alternative (LPA).

The Metrorail Alternative (Alignment T6, Yard Site 15) evaluated in the Draft EIS was selected as the LPA by the WMATA Board of Directors and the Commonwealth Transportation Board, in late 2002. A Supplemental Draft EIS was prepared to assist decision-makers and the public in understanding how a refined design of the proposed LPA, the adjustment of project opening years, and the decision to construct the project in two phases would compare to the alternative carried forward from the Draft EIS. A comparative evaluation of a No Build Alternative and associated costs is also included. The Supplemental Draft EIS was published in October 2003 and public hearings were held in early December 2003.

If the proposed modifications are approved for the LPA, then the effects will also be further documented in a Final EIS.

4.1 NO BUILD ALTERNATIVE

The No Build Alternative for the Supplemental Draft EIS is the same as the Baseline Alternative defined in the Draft EIS. The alternative includes all existing highway and transit infrastructure and services within the corridor and any that are committed to be implemented by 2025, aside from the Dulles Corridor Rapid Transit Project. The following elements are included:

- Existing highways;
- Existing Metrorail infrastructure;
- Existing Metrobus, Fairfax Connector, and Loudoun County bus services;
- Fairfax and Loudoun counties' planned transit improvements included in Phase II (Enhanced Express Bus) of the Dulles Corridor phased implementation program;
- Planned highway and transit improvements through 2025 included in the Metropolitan Washington Council of Government's (MWCOG's) 2000 financially constrained long-range plan (CLRP);
- Marginal increases in local transit service and capacity commensurate with forecast population growth in the corridor through 2025; and
- Additional capacity improvements to the existing Metrorail system needed to meet forecast increases in travel demand.

Specific projects included in the No Build Alternative will be the subject of other independent environmental review processes to comply with NEPA, as appropriate.

4.2 METRORAIL ALTERNATIVE (T6/Y15)

The Metrorail Alternative (T6/Y15) evaluated in the Draft EIS was the original Locally Preferred Alternative. Based on the Draft EIS technical analysis, comments received from the public, and coordination with local, state, and federal agencies, the WMATA Board of Directors selected the Metrorail Alternative, with Alignment T6 through Tysons Corner and Metrorail S&I Yard Site 15, as the LPA on November 21, 2002. On December 19, 2002, the Commonwealth Transportation Board took similar action. The governing bodies of Fairfax County, Loudoun County, the Town of Herndon, and the Metropolitan Washington Airports Authority also endorsed the selection of this LPA. Appendix F also includes a copy of Attachment A from the *Public Hearings Report Supplement* (November 2002), which documents the final Team recommendations.

The Metrorail Alternative was selected as the LPA because it would:

- Provide better access to corridor activity centers;
- Offer shorter travel times for trips within the corridor;
- Attract the highest number of total riders and new riders;
- Better support the comprehensive plans of Fairfax and Loudoun counties;
- Allow for more transit-oriented development;
- Increase overall mobility in the corridor; and
- Conform to the region's air quality plans by providing the greatest contribution to reducing emissions and improving the region's air quality.

In addition, the Metrorail Alternative was the most preferred by those citizens that submitted comments for the public record. While the BRT and BRT/Metrorail Alternatives would perform higher in terms of cost and implementation time, BRT would not provide direct service connections to Tysons Corner, and BRT/Metrorail would require a mode transfer between Tysons Corner and the western portion of the corridor. The Phased Implementation Alternative could be implemented sooner than Metrorail, but would have higher capital costs and no additional ridership or economic development benefits, because it would have the same end state as the Metrorail Alternative.

Metrorail Alignment T6 was selected as the Tysons Corner alignment because it would:

- Provide for the highest ridership, highest number of new riders, and the highest transit mode share for most corridor subareas;
- Be consistent with existing transportation infrastructure and planned improvements;
- Have fewer neighborhood effects, particularly visual effects, than the other alignments, and,
- Offer more operational flexibility due to its pocket tracks and center platform stations.

While Alignment T9 would have the same ridership benefits, it would have more visual effects and may also conflict with transportation improvements planned by VDOT in Tysons Corner. Because Alignment T1 would have fewer stations and would provide less service than Alignment T6, it was eliminated from consideration. Lastly, while Alignment T4 would provide more geographic coverage than the other alignments, some passengers would be required to transfer and then double-back to reach the station within walking distance of their destination because the four stations would be located on one-way lines.

Metrorail S&I Yard Site 15, located on Dulles Airport property, was selected as the preferred site for the storage, repair, maintenance, and inspection of Metrorail trains. This site was selected because it would be the most consistent with existing land use, future land use plans, and existing zoning requirements. Site 15 would also have fewer economic development effects in Loudoun County, because it would not interfere with local planned development.

The Metrorail Alternative is being presented in the Supplemental Draft EIS for comparison against the proposed LPA. The alternative generally follows an alignment between the Metrorail Orange Line near West Falls Church Station and Route 772 in Loudoun County, using the median of the Dulles Connector Road, the DIAAH, and the Dulles Greenway. The alignment diverges from these routes to serve Tysons Corner and Dulles Airport. The alternative would include 11 new stations, as well as ancillary facilities, such as a new Metrorail S&I Yard at Site 15, traction power substations, tie-breaker stations, and stormwater management ponds.

The Metrorail Alternative would include 8-car trains operating at headways of 6 minutes during the peak period, and a mix of 4- and 6-car trains operating at 12-minute headways in the off-peak period. The alternative would also include operating plans for bus routes feeding into Metrorail stations within the corridor, as well as regional routes running the full length of the corridor.

4.3 LOCALLY PREFERRED ALTERNATIVE

Based on public and agency coordination following the completion of the Draft EIS, DRPT and WMATA have identified a series of refinements to the Project to resolve outstanding design issues, reduce environmental and community impacts, and allow for construction of the Project in two phases.

4.3.1 CHANGES FROM METRORAIL ALTERNATIVE OF THE DRAFT EIS

As indicated earlier, the Metrorail Alternative advanced from the Draft EIS has undergone several design refinements. The differences between the alternative evaluated in the Draft EIS and the proposed LPA are outlined below.

- Dulles Connector Road to Tysons East Station: the alignment would be shifted to the north side of Route 123 soon after diverging from the Connector Road to avoid the excessive use of bents on a long oblique crossing of Route 123.
- Tysons East Station: the station platform would be shifted 100 feet west along the alignment. The pocket track at this station would be removed. In place of the pocket track, a #10 crossover would be added inbound of station.
- Tysons Central 123 Station: Three bus bays would be added on the north side of Route 123, parallel to the station platform. Tysons Boulevard would be widened to accommodate a bus-only turn lane at the station. The number of bus bays on the south side of Route 123 would be reduced from five to three, and the location would be moved to the lower level.
- Tysons West Station: The park-and-ride structure at this station would be eliminated. Kiss & Ride and bus facilities would remain at the same location, but would be reconfigured on the site. A 500-space park-and-ride facility would be constructed at the station through a joint development effort. The cost would be assumed as part of project, but design specifics are not yet known.
- Wiehle Avenue Station: The park-and-ride structure at this station is no longer assumed to be a part of joint development project. Instead, it would be constructed as part of the Dulles Corridor Rapid Transit Project. Two design options are under consideration. Option A would use the self-

storage site near Reston East Park-and-Ride for temporary parking while the new facility is constructed in the existing lot. The self-storage site would be available for redevelopment when the structure is complete. Option B would construct the new facility on the self-storage site, and then convert the existing lot to joint development use when the structure is complete. Both options would include a second access from the private road and would require widening of Sunset Hills Road.

- Reston Parkway Station: The access for the north side station facilities would be moved to the west end of the Kiss & Ride lot, opposite an existing median break. Access is now from Sunset Hills Road, rather than through the TRW parking lot.
- The western portal of the underground section at Dulles Airport would be shifted 350 feet north to avoid effects upon the Dulles Marriott.
- Route 606 Station: The second stage park-and-ride structure identified in the Draft EIS would not be constructed, but access to the site would be preserved. Total parking at the station would be reduced to 2,750 spaces (including existing parking at Dulles North Transit Center).
- Route 772 Station: Both options considered for station facilities in the Draft EIS were selected. As a result, long-term parking, Kiss & Ride, and bus facilities would be included on the north and south sides of the Dulles Greenway. The layout of the Kiss & Ride and bus facilities would be reconfigured. Total long-term parking would be 3,300 spaces.
- West Falls Church S&I Yard: A sound attenuation box would be constructed over the loop track and a portion of the new yard lead to mitigate a noise impact identified in the Draft EIS. Four additional storage tracks would be constructed in the northeast portion of the yard (for a total of eight new storage tracks). The maintenance building would be modified to accommodate four additional maintenance bays.
- The number of traction power substations and tie-breaker stations would remain the same, but some locations at the western end of corridor would be shifted.

4.3.2 CONSTRUCTION PHASING

Based on agency coordination conducted subsequent to the selection of the LPA, DRPT and WMATA modified the selected LPA to allow for construction of the project in two phases. Guidance on federal funding limitations and the timing of local funding availability were considered in determining the proposed phasing.

The first phase, the Wiehle Avenue Extension, would construct the first segment of the LPA to the Wiehle Avenue Station, which would function as an interim end-of-line station until remainder of the LPA is completed. In addition, corridor express bus service would be provided in the western end of the corridor in the interim. The Wiehle Avenue Extension, labeled Phase 1 in the SDEIS, is expected to be complete in 2009, and completion of the full LPA is anticipated by 2015.

As discussed in the technical memorandum included in Appendix C, extending the initial portion of the LPA to Wiehle Avenue would provide a logical interim terminal for the initial Dulles Corridor line, allowing it to provide the maximum benefit possible with the available resources. This segment would be able to accommodate a substantial amount of the projected ridership demand for the LPA, at approximately half the cost, and would be possible to fund at both the local and federal levels. In addition, it is possible to accommodate an interim terminal at Wiehle Avenue without constructing a new Metrorail S&I yard, although major modifications would be required at West Falls Church S&I Yard.

A more detailed evaluation of the proposed construction phasing is documented in a technical memorandum included in Appendix C.

5.0 ALTERNATIVE LOCATIONS AND SITE PLANS OF THREE PROJECT FACILITIES

The following section provides a summary of the design changes that were developed as a result of a May 18, 2004 post-hearing conference on the alternative site plans and locations of three Project facilities: Traction Power Substation #2, Tie-Breaker Station #2 and Tysons West Station entrance and facilities. The conference emanated from comments in the record of the December 2003 hearings on the Supplemental Draft EIS and General Plans-Revisions.

The design changes and the basis for incorporating them into the Project are described below. The evaluation of the alternatives is presented in the technical memoranda in Appendix D.

5.1 TRACTION POWER SUBSTATION #2

The operation of Metrorail requires traction power substations. TPSS are facilities that supply direct current power for the rail system. The power supplies electricity as high voltage current, which the TPSS reduces and converts to direct current and feeds to the contact rail that powers the rail vehicles.

The Draft EIS and Proposed General Plans depicted the location of TPSS-2 along the south roadside of the Dulles Connector Road within the existing right-of-way. Vehicular access to TPSS-2 was via the Dulles Connector Road. In response to the comments in the public hearing record and for safety reasons, the Project Team decided to change the access for TPSS-2 and other ancillary facilities from freeway access to local road access and further decided to move TPSS-2 westward to the southwest undeveloped quadrant of the Magarity Road underpass of the Dulles Connector Road in order for the TPSS-2 to be away from the shoulder of the Dulles Connector Road.

For the conference, the Project Team notified those parties who have expressed interest and/or delivered comments into the public hearing record with respect to TPSS-2. The post-hearing conference generated no comments from the officials, stakeholders or residents.

The westward relocation of TPSS-2 to the southwest quadrant of the Magarity Road underpass of the Dulles Connector Road is upon undeveloped public land of the Dulles Connector Road but on the residential side of the Road's wooden noise wall. The land is owned by FAA, leased by FAA to MWAA and maintained by VDOT. The driveway of the substation would connect with Olney Drive. WMATA would be responsible for the maintenance of the driveway and of the land within the permanent easement of the substation.

That first location would have required the removal of vegetation that screened the Dulles Connector Road from the Olney Road residences. The new location avoids the need to remove existing roadside vegetation but will remove a limited number of trees and shrubs on the undeveloped land of the Dulles Connector Road.

Based on these findings, the Project Team recommended the evaluation of the new location of the TPSS-2 in the Final EIS.

5.2 TIE-BREAKER STATION #2

The operation of Metrorail requires tie breaker stations. These are usually located at crossovers in the Metrorail tracks. TBS-2 would support two single crossovers in the Metrorail tracks in the median of the Dulles Connector Road. A tie breaker station permits WMATA to break the Metrorail line into sections, allowing power in one or more sections to be shut down for maintenance without affecting the power supply to the rest of the system.

In response to the comments in the record of the December 2003 hearings, the Project Team developed and evaluated three alternative locations: Options A, B and C.

- Option A is essentially that of the Proposed General Plans-Revisions of the Supplemental Draft EIS. The location is within the right-of-way of the Dulles Connector Road but on the residential side of the Road's wooden noise wall. The driveway of Option A connects with Baldwin Drive and would traverse the side yard of the 1836 Baldwin Drive residence.
- Option B is on the private land of the Tuckahoe Recreation Club; this southeast corner of the Club is wooded and has a miniature golf course.
- Option C is on undeveloped, landlocked private land; its driveway would connect with the dead-end of Taylor Road and traverse Olney Park, owned by Fairfax County Park Authority. This eastern part of the park is undeveloped woods but has a known archaeological site. (44FX388 - a former Native American quarry) in its vicinity. Based on field testing and past mapping of the site, neither the proposed access driveway nor the TBS-2 building would affect this archaeological site.

The Project Team recommended Option A as the location for TBS-2 for evaluation in the Final EIS instead of Options B or C. As identified by the Tuckahoe Recreation Club, Option B would displace its miniature golf course, remove mature trees, claim space that visiting swim teams use during meets, and could possibly be an attractive nuisance for Club members. Consequently, Option B generated strong opposition from Club officers and membership. In regards to Option C, it could not be recommended because both Options A and B are 'feasible and prudent' alternatives as defined by the above referenced federal law that protects parklands from transportation projects.

The Team recommended that a new wooden noise wall surround the TBS-2 for its security, for enhanced community safety and for the aesthetics of the neighborhood. Since TBS-2 would not be visible from the Baldwin Drive neighborhood, it would not receive any architectural treatment. As currently planned, the location of the access driveway and any temporary construction easement will be fully within the property of 1836 Baldwin Drive.

5.3 TYSONS WEST STATION ENTRANCE AND FACILITIES

The October 2003 Supplemental Draft EIS and Proposed General Plans-Revisions included the Project Team's proposal for the Tysons West Station facilities on the site of the former Templeton Oldsmobile automotive dealership, now leased by HBL Incorporated and operated as a Porsche/Audi dealership. The facilities include bus bays, Kiss & Ride and station entrance pavilion. This site had been considered by the Project Team for Tysons West station facilities since the beginning of the Project's NEPA environmental review process, though the size and configuration of facilities at this location varied depending on the alternative being considered (e.g., Bus Rapid Transit (no facilities), Metrorail, and BRT/Metrorail). Following the selection of Metrorail as the LPA, the station facilities proposed at this location were reduced in size and reconfigured.

The record of the December 2003 public hearings on the Project's Supplemental Draft EIS and the General Plans-Revisions included numerous comments on the proposed Tysons West Station and its facilities. The Fairfax County Board of Supervisors, its Non-Motorized Transportation Committee and the business directly affected by the facilities were among the major stakeholders who provided comments on this issue. In response to these comments, the Project Team developed and evaluated four alternative site plans: Options A, B, C and D. Each option is summarized below.

- Option A is essentially that of the General Plans from the Supplemental Draft EIS. It retains the location for station facilities originally evaluated in the Draft EIS. The bus bays and Kiss & Ride facilities are located at the intersection of Route 7 (Leesburg Pike) and Tyco Road, on the north/outbound side of Tyco Road, at the site of the former Templeton Oldsmobile (now HBL Porsche/Audi) automotive dealership.
- Option B locates the bus bays and Kiss & Ride facilities at the south/inbound side of Tyco Road, at the intersection of Route 7 and Tyco Road, at the site of the current Peacock Buick automotive dealership. This option retains the station entrance on the outbound end of the station, but responds to comments from Fairfax County and others to consider placement of the station facilities on the south side of Tyco Road.
- Option C relocates the station entrance from the outbound end of the station platform, near Tyco Road, to the inbound end, near Spring Hill Road. The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7. This new option was developed in response to comments from the Fairfax County Non-Motorized Transportation Committee and others suggesting that a Spring Hill Road location for the station entrance would better facilitate pedestrian and bicycle access.
- Option D relocates the station entrance to the center of the station platform, at a mid-block location on Route 7, between Tyco Road and Spring Hill Road. The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7. Option D also takes advantage of currently vacant public property behind the existing Fairfax County Fire & Rescue facility (Fire & Rescue Station #29). This new option responds to issues raised by the potentially impacted property owners and tenants expressed in comments on the Public Hearing Report of the Supplemental Draft EIS, and during meetings held with these stakeholders.

The Project Team evaluated the Options on the following criteria:

- Property Acquisition and Business Effects
- Vehicular Access
- Pedestrian and Bicycle Access
- Transit Customer Convenience and Safety
- Ability to Accommodate Joint Development
- Support of Transit Oriented Development

At the close of the public and agency review and comment period, the Project Team developed and recommended an Option E for the Tysons West entrance and station facilities for evaluation in the Final

EIS. Option E is a viable variant of Option C and has its station entrance at the inbound, east end of the station near Spring Hill Road. The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7. Option E's initial access at Tyco Road is similar to Option C and would be for access to station facilities only. In response to expressions of interest in having a second access point to the station facilities and in an initiation of a street grid in this area of Tysons Corner, Option E includes a possible, later connection to Spring Hill Road. That connection cannot be advanced at this time due to its proximity to the driveways of Fire Station No. 29.

However, the current access to a portion of Cherner Automotive Group's existing automotive operations from Spring Hill Road would be closed by Option E, as it was by Option C. Alternative access to the property would be developed in coordination with the property owner during preliminary engineering.

In summary, the Project Team recommended Option E at Tysons West Station because it would:

- Offer high transit customer convenience and safety and thus best serve the mobility goals of the Project.
- Better facilitate pedestrian and bicycle access, as urged by the Fairfax County Non-Motorized Transportation Committee, the McLean Citizens Association and others.
- Preserve Route 7 frontage for future redevelopment.
- Position the bus bays and Kiss & Ride facilities to better accommodate possible joint development in support of Fairfax County's goals for Transit Oriented Development (TOD) in and around transit stations.
- Allow the future construction of the roadway connection to Spring Hill Road for improved vehicular access.
- Place the access point on Tyco Road at the farthest point possible in order to lessen the effects on the Route 7 intersection.
- Reduce the effects upon the Cherner Automotive Group's operations and avoid the displacement of the business tenants of RMC TYCO, LLC.
- Reduce the property requirements and locate the facilities to improve the potential for redevelopment of surrounding parcels.

6.0 ALTERNATIVES CARRIED FORWARD IN THE FINAL EIS

This chapter provides brief introductions to the alternatives to be examined in the Final EIS: the No Build Alternative and the Locally Preferred Alternative (LPA).

6.1 NO BUILD ALTERNATIVE

For the Final EIS, the No Build Alternative is an updated version of the Baseline Alternative evaluated in the Draft EIS. In the Draft EIS, all Build Alternatives for the Dulles Corridor Rapid Transit Project were evaluated against the Baseline Alternative. This alternative represented the no-build condition for the corridor, and included all existing highway and transit infrastructure and services within the corridor, plus any that were committed to be implemented by 2025, aside from the Dulles Corridor Rapid Transit Project. For consistency purposes in terms of the need for a comparative evaluation, the Build Alternatives evaluated in the Supplemental Draft EIS were also evaluated against the No Build Alternative included in the Draft EIS.

For the Final EIS, the No Build Alternative reflects changes in the existing highway and transit networks and changes in future plans for infrastructure and services. Several of the planned projects in the Draft EIS Baseline Alternative were completed and some transit services have been modified. In addition, plans for future improvements have been amended due to recent events, budget concerns, and changes in priorities.

- In November 2002, a transportation sales tax referendum put to the Northern Virginia voters failed to pass, making funding questionable for some of the projects previously included in long-range plans. The Virginia Department of Transportation (VDOT) and the counties were forced to rethink their long-range plans, and some of the projects included in the Draft EIS Baseline are no longer expected to be implemented by 2025.
- Also in November 2002, the WMATA Board approved the transit agency's 10-Year Capital Improvement Program. This program integrated the recommendations of the Infrastructure Renewal Program, the Metrorail Core Capacity Study, the WMATA Regional Bus Study, and the Transit Service Expansion Plan. While many of these studies and plans reflected the scope of needed improvements under unconstrained financial conditions, this CIP reflects the anticipated funding capacities of WMATA Compact member jurisdictions. As a result, some of the operational improvements assumed for regional Metrorail in the Draft EIS Baseline (per the Core Capacity recommendations) are no longer expected to be implemented.
- The Washington metropolitan region is currently in the process of developing the 2003 update to its Financially Constrained Long Range Plan (CLRP). The Draft EIS Baseline was based on the projects included in the 2000 CLRP, which was the last comprehensive update of the CLRP (including financial analysis). Federal planning regulations require that the long range plan be updated every three years to reflect changes in funding capacities and anticipated needs.

> For the current update cycle, the list of projects submitted for inclusion (or deletion) in the 2003 Update was approved by the National Capital Region Transportation Planning Board (TPB) in May 2003. The Final EIS No Build Alternative reflects these proposed updates. The technical analysis of the financial element of the CLRP was completed in July 2003, and the CLRP is currently being reviewed for conformity with the region's air quality plans. It is anticipated that the 2003 CLRP will be approved in November 2004.

The table in Appendix E presents a detailed comparison of the Draft EIS Baseline and Final EIS No Build alternatives. Some of the major changes for the Final EIS are summarized in the following sections.

6.1.1 CHANGES FOR TRANSIT NETWORK

In the Draft EIS Baseline, the transit network reflected the existing services in 2001 and planned improvements to transit services. Planned improvements included those in the 2000 CLRP, those in local transit plans, and several improvements to the Metrorail system needed to meet forecast travel demand, which were expected to be included in WMATA's capital improvement program. Since publication of the Draft EIS, both existing services and planned improvements have been modified.

Fairfax County

During preparation of the Draft EIS, Fairfax County had extensive plans in place for expanding their transit service. As outlined in the Draft EIS Baseline description, planned enhancements included improved peak and midday headways for Reston circulator services and an increase in peak-period service from Reston to Tysons Corner Center and the West Falls Church Metrorail Station. Since the publication of the Draft EIS, these planned improvements have been implemented, and are included in the Final EIS No Build as part of the existing transit network.

Planned improvements included in the Final EIS No Build Alternative include construction of a transit center at Reston Town Center, and slight modification of routes to connect to the transit center when complete. Minor improvements in service frequencies are also included for some routes.

Loudoun County

Since publication of the Draft EIS, Loudoun County has modified their existing transit services by increasing the number of express trips, implementing reverse commute trips between West Falls Church Metrorail Station and the Dulles North Transit Center (DNTC) and the AOL and MCI campuses, and by implementing local services in the Sterling area and along Route 7. These changes were not part of the planned improvements reflected in the Draft EIS Baseline.

The Final EIS No Build Alternative includes these new existing services and reflects future plans for two new local routes—one providing circulation between the DNTC and Dulles Town Center, the other between the DNTC and Dulles Airport. The No Build also includes slight increases in trip frequencies for express routes and the County's reverse commute route.

WMATA

In June 2003, WMATA implemented a fare increase for both Metrobus and Metrorail. The base boarding fare for both bus and Metrorail increased from $1.10 to $1.20. Increases in maximum fares varied for the two modes. Parking rates were also increased across the board by $0.75.

Metrobus. Some of the Metrobus routes in Tysons Corner have been modified slightly. These changes do not reflect improvements that were included in the Draft EIS Baseline. The Final EIS No Build Alternative incorporates the route modifications, and the planned improvements that were included in the Draft EIS Baseline have been changed to reflect this change in existing services.

Metrorail. WMATA has recently modified the supplemental peak hour service that operates on the Orange Line between West Falls Church and New Carrollton stations. Some of the supplemental trains now operate between Vienna and New Carrollton. Like the West Falls Church supplemental service, the Vienna supplemental service only operates in the peak direction in the peak hour (a.m. and p.m.).

The Draft EIS Baseline included several recommendations from the Metrorail Core Capacity Study that would be required to meet forecast increases in transit demand. These improvements included the expansion of peak-period train consists on the Orange and Blue lines from six to eight cars, the associated upgrade of traction power systems, and two major upgrades of the train control system—one to allow for precise stopping of eight-car trains at stations, and the other to allow trains to run closer together along the mainline tracks in the system's core. These improvements were expected to be included in the capital improvement program (CIP) being drafted by WMATA at the time the Draft EIS was published.

The 10-Year CIP approved in November 2002 included many of the Core Capacity recommendations assumed in the Draft EIS baseline, but did not include the train control upgrades that would be required to operate trains with closer spacing in the core. As a result, WMATA adjusted their planned future operating plans for the Metrorail system. Peak-period service frequencies on the Orange and Blue lines will be reduced from 6-minute headways (10 trains per hour) to approximately 7 minutes (8 to 9 trains per hour), and half of the peak-period Blue Line trains will be diverted from the Rosslyn tunnel to the Yellow Line. Additional service will be added to the Orange Line, which will operate between Vienna and Largo (on the Blue Line). Supplemental Orange Line service will continue to operate from Vienna and West Falls Church. The Final EIS No Build Alternative reflects this change in operations.

6.1.2 CHANGES FOR HIGHWAY NETWORK

Several of the planned improvements included in the Draft EIS Baseline for regional highways and other major roadways have been removed from the Final EIS No Build Alternative, and some new improvements have been added. Below, differences between the Draft EIS Baseline and the Final EIS No Build Alternative highway networks are summarized. Note that the dates by which the projects are expected to be complete correspond to the analysis years for the Dulles Corridor Rapid Transit Project (2009, anticipated opening year for the first phase; 2015, anticipated opening year for the full LPA; 2025, forecast horizon year). Projects may be completed prior to the years indicated.

- **I-495.** In addition to the improvements included in the Draft EIS Baseline, the Final EIS No Build Alternative includes the widening of westbound and eastbound ramps at the I-495/Dulles Toll Road interchange. The ramp from the outer loop to the westbound Toll Road will be widened to two lanes. The exit from the eastbound Toll Road to I-495 will be widened to two lanes. These improvements are expected to be complete by 2009.
- **Dulles Greenway.** The Final EIS No Build Alternative includes proposed new interchanges at Route 653 and Route 654, in addition to the widening of the Greenway to six lanes between Route 901 and the Routes 7/15 Bypass. The interchanges are expected to be in place by 2009,

while the widening is expected to be complete by 2025. Note: the planned widening of the Greenway between Route 901 and the mainline toll plaza is now complete.

- **Route 7.** The Final EIS No Build Alternative does not include proposed grade-separated interchanges at Route 7/International Drive or Route 7/Westpark Drive. The No Build also does not include proposed improvements at the Route 7/Route 123 interchange.
- **Route 123.** The Final EIS No Build Alternative does not include the proposed grade-separated interchange at Route 123/International Drive. Note: the planned widening of Route 123 between I-495 and the Dulles Connector Road is now complete.
- **Route 28.** The proposed improvements included in the Draft EIS Baseline are more clearly defined in the Final EIS No Build Alternative. By 2015, the road is expected to be widened to eight lanes and upgraded to a freeway between Route 7 and I-66. The segments between Sterling Boulevard and Route 606, and between McLearen Road and Route 50, are expected to be complete by 2009. New grade-separated interchanges at Sterling Boulevard, Route 606, the National Air and Space Museum, McLearen Road, and Westfields Boulevard are expected to be complete by 2009.
- **Route 50.** The Final EIS No Build Alternative does not include the proposed widening of Route 50 between the Fairfax/Loudoun county boundary and Old Lee Road.
- **Loudoun County Parkway.** In addition to the improvements included in the Draft EIS Baseline, the Final EIS No Build Alternative includes the construction of Loudoun County Parkway between the Dulles Greenway and Route 234. The proposed construction segments are expected to be complete as follows: Braddock Road to the Greenway by 2009, I-66 to Braddock Road by 2025, Route 234 to I-66 by 2015.
- **Spring Hill Road.** The Final EIS No Build Alternative includes the planned widening of Spring Hill Road only between Route 7 and International Drive. The widening is expected to be complete by 2009.
- **Monroe Street.** The Final EIS No Build Alternative does not include the proposed widening of Monroe Street through the area of analysis for the Dulles Corridor Rapid Transit Project.
- **Centreville Road/Elden Street.** In addition to the improvements included in the Draft EIS Baseline, the Final EIS No Build Alternative includes the widening of Elden Street to six lanes between Fairfax County Parkway and Herndon Parkway (East). This widening is expected to be complete by 2015.
- **Route 789.** The Final EIS No Build Alternative does not include the proposed widening or extension of Route 789 to Waxpool Road.

6.2 LOCALLY PREFERRED ALTERNATIVE

It is anticipated that the LPA for the Final EIS will be very similar to the LPA evaluated in the Supplemental Draft EIS and presented in Section 4.3. The design of the LPA may be further modified based on the results of the public review and comment period for the Supplemental Draft EIS and additional agency coordination.

In addition, the operating plan for the LPA would be modified to be consistent with the Metrorail and local bus operating changes identified for the No Build Alternative in Section 5.1. The Final EIS LPA would include 8-car trains operating at headways of approximately 7 minutes during the peak period (8 to 9 trains per hour), and 4-car trains operating at 12-minute headways in the off-peak period.

The evaluation presented in the Final EIS will address the effects of the full LPA and the Wiehle Avenue Extension in its opening year. The analysis will also consider the effects of the Wiehle Avenue Extension in 2025, if the full LPA is not implemented in its entirety.

Appendix A

- Alignments BRT 2 and BRT 3
- Alignment T9 Revised
- Station Convertibility
- Supplemental Rail Yard Study

Alternatives Evaluation Technical Memorandum

BRT Alternative: Alignments BRT 2 and BRT 3

The purpose of this technical memorandum is to document the results of the alternatives evaluation for an alignment that was revised following the initial alternatives analysis process for the Dulles Corridor Rapid Transit Project. This analysis is consistent with the *Evaluation Methodology* (November 2000) developed for the project, and is based on the same social, environmental, economic, and transportation factors used for the evaluation documented in the *Final Alternatives Analysis Report* (May 2001). This memorandum includes a description of the revised alignment, an evaluation of the alignment, and conclusions or recommendations regarding further analysis.

1.0 DESCRIPTION OF ALTERNATIVE

Alignments BRT 2 and BRT 3 extend through the full length of the Dulles Corridor. They are design refinements of the BRT alignment carried forward from the alternatives analysis phase of the Dulles Corridor Rapid Transit Project.

Alignment BRT 1. As shown in Figure 1, the BRT alignment that was originally considered in the Draft EIS (now called Alignment BRT 1) extends through the full length of the Dulles Corridor, primarily operating on the Dulles Connector Road, the Dulles International Airport Access Highway (DIAAH), and the Dulles Greenway. The alignment includes six stations and three stops. Five stations (similar to Metrorail stations) are located in the DIAAH median at Spring Hill Road, Wiehle Avenue, Reston Parkway, Herndon-Monroe, and Route 28. All but the Spring Hill Road Station would be convertible to Metrorail stations if Metrorail was later developed in the corridor. A sixth station is located at the existing West Falls Church Metrorail station. Here, passengers would be required to transfer to the Metrorail Orange Line to continue to Arlington County and the region's core. BRT stops are located at Dulles Airport, Route 606, and Route 772. At these locations, buses will leave the DIAAH or Dulles Greenway to access "offline" park-and-ride facilities.

Alignment BRT 2. As shown in Figure 1, Alignment BRT 2 would be nearly identical to Alignment BRT 1, except that it does not include a station or stop at Route 28, and the Spring Hill Road Station is replaced with a BRT stop at the existing Tysons-West*Park Transit Station. Overall, this alignment includes three median stations, one transfer station, and four stops. The median stations for Alignment BRT 2 would be a simpler version of those proposed for BRT 1, but would still be convertible to Metrorail stations.

Alignment BRT 3. For Alignment BRT 3, most of the median stations in the DIAAH are replaced with BRT stops. As shown in Figure 1, the alignment includes only one median station at Reston Parkway. This station is a multi-level station that offers a different conversion approach for later Metrorail use; it would be configured with a BRT platform at ground level, below a

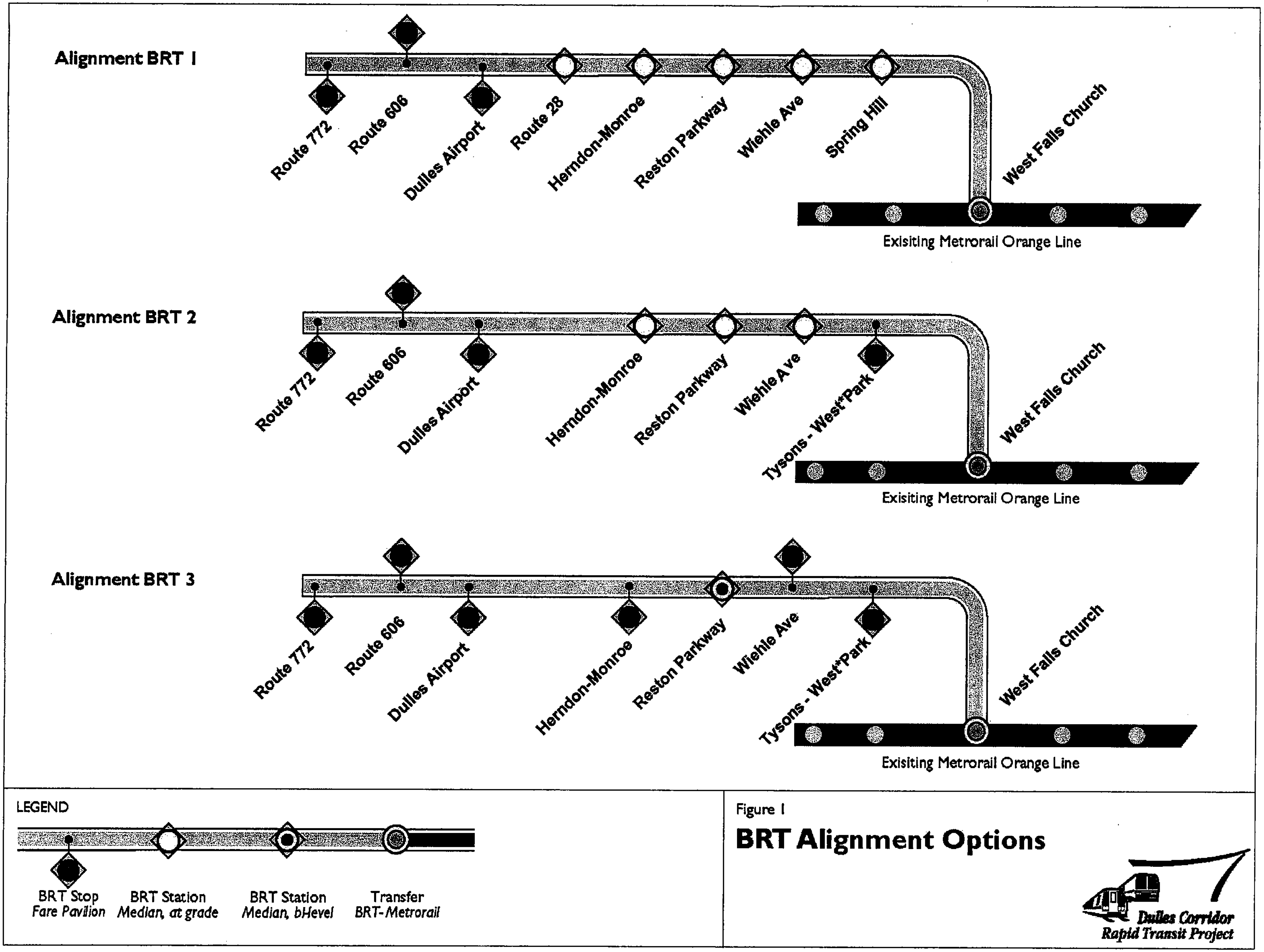


Figure 1

BRT Alignment Options

Metrorail platform. For Alignment BRT 3, stops would be located at the Tysons-West*Park Transit Station, the Reston East Park-and-Ride (Wiehle Avenue), the Herndon-Monroe Park-and-Ride, Dulles Airport, Route 606, and Route 772. Alignment BRT 3 also includes a transfer station at the West Falls Church Metrorail Station.

2.0 BACKGROUND

History of BRT Alignment

The BRT 1 alignment was evaluated as part of the alternatives screening process for the Dulles Corridor Rapid Transit Project. The analysis and recommendations for the screening analyses were documented in technical memoranda. These memoranda were reviewed by the Alternatives Development Working Group, which included representatives from the Washington Metropolitan Area Transit Authority (WMATA), the Virginia Department of Rail and Public Transportation (DRPT), and the consultant team. Comments and questions were discussed at Working Group meetings, and once agreement on revisions to the technical memoranda or outstanding issues was reached, the BRT alignment from the MIS Supplement was carried forward for additional analysis. In addition, a BRT station at Route 28 (which was not considered during the MIS) was carried forward as part of the BRT Alternative.

Additional background information on the BRT alignment and the Route 28 BRT Station, and a more detailed account of the alternatives screening analysis, are provided in the technical memoranda in Appendices B and D of the *Final Alternatives Analysis Report*.

Development of Alignments BRT 2 and BRT 3

As the Dulles Corridor Rapid Transit Project moves forward in the environmental review process, the alternatives carried forward for evaluation in the Draft EIS are being developed at a higher level of design detail. This advanced design has allowed the Project Team to prepare improved cost estimates for the alternatives. Upon review of the new cost estimates, the Steering Committee for the project requested that the project team examine possible ways to optimize a number of the alternatives under consideration, reducing costs where possible.

For the BRT Alternative, the team examined different ways to reduce the cost of BRT while still providing improved transportation service in the corridor. Alignments BRT 2 and BRT 3, with fewer median stations and more BRT stops, are the resulting refinements of the BRT alignment.

BRT 3 was originally intended to be an "all stops" alignment, but space was not available at Reston Parkway to provide a stop at that location. Since one of the objectives for the BRT Alternative was to be convertible to Metrorail in the future, if warranted, the "stacked" station concept was developed for the Reston Parkway Station to demonstrate another approach to convertibility.

2.0 SCREENING EVALUATION

As shown in the evaluation below, Alignments BRT 2 and BRT 3 offer cost and construction benefits, but are less consistent with local plans and could have ridership impacts.

BRT 2 and BRT 3 will offer capital cost savings over BRT 1.

The Project Team developed preliminary capital costs for Alignments BRT 2 and BRT 3 based on standard costs for various BRT components. The resulting cost estimates are only a rough approximation of what it will cost to construct the new alignment options. While these costs are an excellent means of comparing the relative cost of the alignments to that for Alignment BRT 1, they are not an accurate measure of the absolute project costs.

Potential cost reductions were the primary reason that the new BRT alignment options were developed. Preliminary estimates indicate BRT 2 and BRT 3 will offer cost savings as follows:

	BRT 1	BRT 2	BRT 3
Capital Costs (in millions)	$515	$313	$206
Savings over BRT 1 (in millions)	–	$202	$309

Source: Preliminary CTC estimates, August 2001.

Alignments BRT 2 and BRT 3 are less consistent with local plans.

In general, Alignments BRT 2 and BRT 3 are consistent with local plans because they provide improved transportation service to most activity centers in the Dulles Corridor. However, these alignment options are less consistent with local plans than Alignment BRT 1 because they do not include a station or stop in the vicinity of Route 28, a growing activity center in the Dulles Corridor.

A BRT station at Route 28 was carried forward from the screening analysis as part of the BRT Alternative because a review of the existing and planned land use in this area showed that it would be supportive of transit in the near term due to its density and approved build out. Following completion of the MIS, the area around the proposed Route 28 station experienced significant development, and Fairfax and Loudoun counties approved high intensity mixed-use development in the area surrounding the Route 28 and DIAAH/DTR interchange.

The lack of a Route 28 station under Alignments BRT 2 and BRT 3 would not be consistent with the planned level and type of development in the Route 28 vicinity.

Alignments BRT 2 and BRT 3 offer some advantages for construction.

Overall, the ease with which Alignment BRT 2 could be constructed would be similar to that for BRT 1. However, because the stations proposed for the BRT 2 alignment option would be simpler than those for BRT 1, and because the alignment option would include two fewer median stations, Alignment BRT 2 would be somewhat easier to construct.

Similarly, Alignment BRT 3 should be much easier to construct because it only includes one median station. However, the increased complexity in the design of this one station could minimize some of the constructibility advantages.

Ridership for Alignments BRT 2 and BRT 3 could be reduced.

Because they include fewer stops and stations (eight total, rather than nine), Alignments BRT 2 and BRT 3 could attract lower ridership volumes than BRT 1. However, the change in operating patterns associated with the change from stations to stops at some locations could result in more direct service for some trips. This improvement could have ridership benefits for these new alignment options.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The evaluation above indicates that Alignments BRT 2 and BRT 3 would offer cost savings and some constructibility benefits; however, the optimized alignments would also be less consistent with local plans than BRT 1, and could reduce ridership for the BRT Alternative. At this preliminary level of evaluation it is difficult to fully assess the likely cost effectiveness of these design variations. Any additional impacts or reduced benefits associated with Alignments BRT 2 and BRT 3 are appropriately evaluated against the other Build Alternatives and the Baseline Alternative at the Draft EIS level of analysis.

Therefore, it is recommended that Alignments BRT 2 and BRT 3 be carried forward for full evaluation in the Draft EIS, in addition to the original BRT alignment (hereafter called BRT 1). Including these alignments will allow for a wider range of configurations to be examined in detail.

Post-Screening Evaluation Technical Memorandum

Tysons Corner Alignments: Alignment T9 Revised

The purpose of this technical memorandum is to document the results of the screening evaluation for an alignment that was revised following the initial alternatives analysis process for the Dulles Corridor Rapid Transit Project. This analysis is consistent with the *Evaluation Methodology* (November 2000) developed for the project, and is based on the same social, environmental, economic, and transportation factors used for the evaluation documented in the *Final Alternatives Analysis Report* (May 2001). This memorandum includes a description of the revised alignment, a summary of findings from previous analysis, an evaluation of the alignment, and conclusions or recommendations regarding further analysis.

1.0 DESCRIPTION OF ALTERNATIVE

Alignment T9 Revised is located within the Tysons Corner section of the proposed Dulles Corridor Rapid Transit Project. It is a design refinement or optimization of Alignment T9, which is a design variation of the alignment recommended in the *Dulles Corridor Transportation Study*, a Major Investment Study (MIS) completed in 1997.

Alignment T9. As shown in Figure 1, Alignment T9 extends through the core of Tysons Corner along Routes 123 and 7. The alignment would be entirely elevated and include three to four aerial stations. The Tysons Central 123 Station would have a side-platform configuration to allow for the narrow track centers required to accommodate future roadway improvements planned by the Virginia Department of Transportation (VDOT) on Route 123.

The alignment would include pocket tracks at the Tysons East and Tysons West stations. These tracks are located between the main tracks and are used to store out-of-service trains and equipment.

Alignment T9 Revised. As shown in Figure 2, Alignment T9 Revised is similar to Alignment T9 in several regards. Alignment T9 Revised would include four aerial stations at the same locations as those on Alignment T9. Moreover, the revised alignment would have a similar horizontal alignment to that of Alignment T9. The alignments primarily differ between the Tysons Central and Tysons Central C stations, where Alignment T9 Revised crosses under Route 123 west of Tysons Central Station, then runs along the south side of the Route 123/Route 7 interchange, rather than extending along the north side of Route 123 and the interchange.

Other differences between Alignment T9 and Alignment T9 Revised are related to the vertical profile, the track and station configurations, and the locations of the proposed pocket tracks.

Alignment T9 Revised is not entirely elevated; it includes an underground segment that roughly extends from the west end of Tysons Central 123 Station to a point south of Route 123, in the eastern quadrant Route 123/Route 7 interchange. This transition to a tunnel segment allows the vertical profile of Alignment T9 to be lowered between the Tysons East and Tysons Central 123 stations and between Tysons Central 123 and Tysons Central 7. As a result, the Tysons Central station would now be approximately 30 to 40 feet high and located partially on retained fill (similar to Alignments T1 and T6), whereas under Alignment T9 it would be a 70-foot high aerial station.

While Alignment T9 would use narrow track centers and a side-platform station configuration at Tysons Central Station, Alignment T9 Revised would use narrow track centers and side-platform stations throughout the Tysons Corner section of the project.

Because a configuration that uses narrow track centers does not provide sufficient room for the pocket tracks proposed at Tysons East and Tysons West stations for Alignment T9, the pocket tracks for Alignment T9 Revised have been eliminated.

Many design features of Alignment T9 Revised—such as the narrow track centers with side platform stations throughout Tysons Corner—could be applied to the other Tysons Corner alignment options, if desired (Alignments T1, T6, and T4).

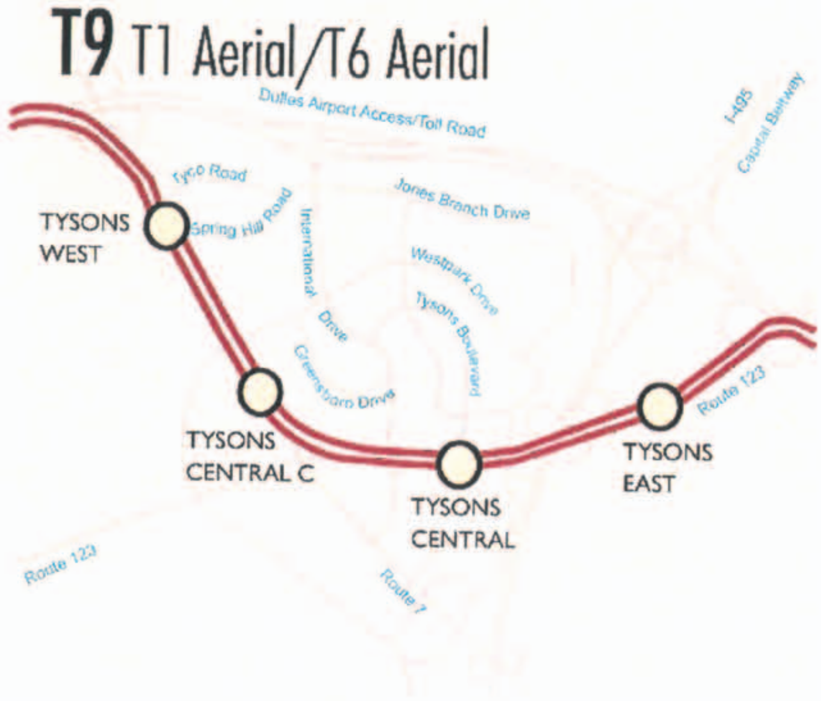


Figure 1: Alignment T9

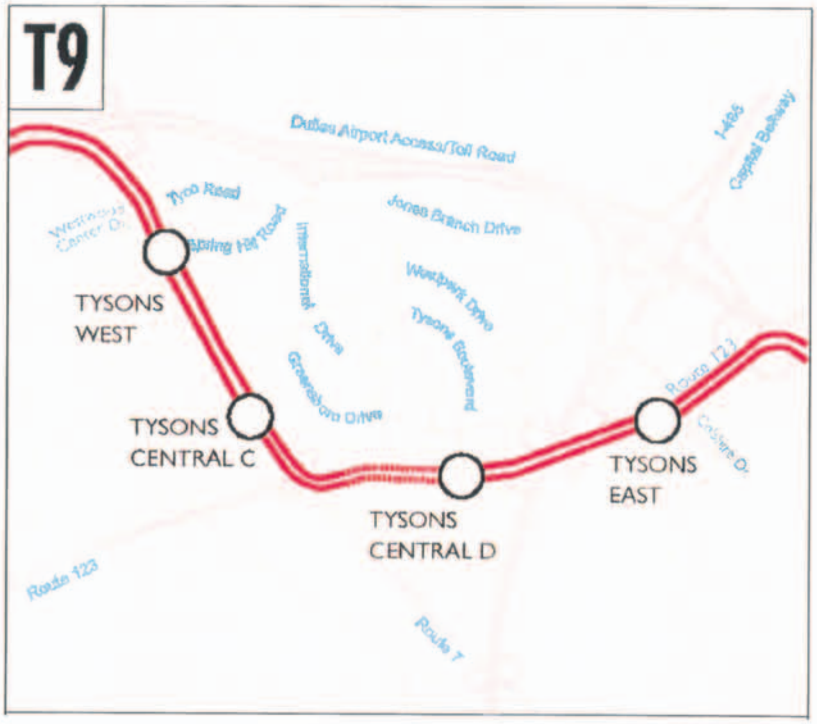


Figure 2: Alignment T9 Revised

2.0 BACKGROUND

History of Alignment T9

Alignment T9 was previously evaluated as part of the two-phase alternatives screening process for the Dulles Corridor Rapid Transit Project. Because it is a design variation of Alignment T1, it was evaluated relative to Alignment T1 and its other design variation, Alignment T6.

During initial screening, it was determined that Alignment T1 and its design variants are consistent with local plans and previous studies and have previously been recommended for further design and environmental evaluation. Moreover, it was determined that Alignments T6 and T9 could have cost saving or ridership benefits beyond that of Alignment T1. It was difficult to assess the relative costs and benefits of the alignments at the preliminary level of evaluation used in initial screening. Therefore, it was recommended that Alignments T1, T6, and T9 be carried forward for further study, including development of ridership and cost estimates.

During intermediate screening, it was determined that Alignment T9 would be less costly than Alignments T1 and T6, but it would have greater visual and noise impacts on the adjacent community due to its high vertical profile. Moreover, the analysis indicated that Alignment T9 may have increased energy requirements due to the grade changes in the profile. (It was determined in a subsequent power analysis that the increased energy requirements for Alignment T9 would be negligible.)

As was the case for initial screening, it was difficult to fully assess the trade-offs for Alignment T1 and its variations at the intermediate screening level of evaluation, because cost and ridership information was very preliminary and insufficient information was available to determine the extent of the likely environmental impacts. As a result, Alignments T1, T6, and T9 were recommended for full evaluation in the Draft EIS.

The analysis and recommendations for the initial and intermediate screening analyses were documented in technical memoranda. These memoranda were reviewed by the Alternatives Development Working Group, which included representatives from the Washington Metropolitan Area Transit Authority (WMATA), the Virginia Department of Rail and Public Transportation (DRPT), and the consultant team. Comments and questions were discussed at Working Group meetings, and once agreement on revisions to the technical memoranda or outstanding issues was reached, Alignments T1, T6, and T9 were carried forward for additional analysis.

Additional background information on Alignments T1, T6, and T9 and a more detailed account of the alternatives screening analysis are provided in the technical memoranda in Appendix C of the *Final Alternatives Analysis Report.*

Development of Alignment T9 Revised

As the Dulles Corridor Rapid Transit Project moves forward in the project development process, the alternatives carried forward for evaluation in the Draft EIS are being developed at a higher level of design detail. This advanced design has allowed the project team to prepare improved cost estimates for the alternatives. Upon review of the new cost estimates, the Steering Committee for the project and WMATA requested that the project team examine possible ways to optimize a number of the alternatives under consideration, reducing costs where possible.

For the Metrorail alignment options in Tysons Corner, the team focused its examination on Alignment T9, working under the assumption that an aerial alignment with a lower vertical profile would offer a significant cost savings benefit. The resulting refinement, or optimization, of Alignment T9 is intended to provide cost savings as well as enhanced structural efficiencies.

3.0 POST-SCREENING EVALUATION

As shown in the evaluation below, Alignment T9 Revised performs well relative to several evaluation criteria, but it is inconsistent with local plans and has a number of trade-offs related to constructibility, environmental impacts, and private property impacts.

Alignment T9 Revised is not consistent with local plans.

As currently designed, Alignment T9 Revised is inconsistent with VDOT's plans for highway improvements in Tysons Corner. First, the vertical profile of the revised alignment is too low to allow proper clearance for the planned improvements at the Capital Beltway/Route 123 interchange. Second, Alignment T9 Revised has both vertical and horizontal conflicts with VDOT's planned improvements at the Route 123/Route 7 interchange.

If Alignment T9 Revised is selected as part of the locally preferred alternative for the Dulles Corridor Rapid Transit Project, WMATA will coordinate with VDOT to resolve any inconsistencies.

Alignment T9 Revised does offer some capital cost savings.

The Project Team developed preliminary capital costs for Alignment T9 Revised based on standard costs for various Metrorail elements. The resulting costs are only a rough approximation of what it will cost to construct the revised alignment. While these costs are an excellent means of comparing the relative cost of the alignment to that for Alignment T9, they are not an accurate measure of the absolute project costs.

Preliminary estimates indicate that Alignment T9 Revised would cost less than the four-station variant of Alignment T9. The lower profile of the revised alignment reduces the cost of the aerial structure substantially, offsetting the costs of the underground segment. Moreover, the side-platform stations would be slightly more expensive than center-platform stations, because they require double the number of escalators and elevators (the side-platform configuration will also increase the operating and maintenance costs).

In addition to the cost changes related to structural elements, Alignment T9 Revised would potentially have cost increases associated with additional right-of-way acquisition. Because side-platform stations are slightly wider than center-platform stations, the revised alignment could require additional land acquisition from private properties adjacent to the stations.

Alignment T9 Revised would not affect the anticipated ridership for a four-station alignment.

The design refinements for Alignment T9 Revised do not result in significant shifts in the station locations or the station entrance locations. Therefore, the revised alignment would have the same anticipated ridership as the original four-station aerial alignment.

There are various trade-offs between benefits and impacts for Alignment T9 Revised.

As was the case for the capital costs, many of the benefits of Alignment T9 Revised are countered by new or additional impacts. Though the design refinements have some advantages for construction, they also have several disadvantages. Likewise, whereas there are substantial improvements for some environmental impact areas, there are additional impacts in others. An overview of several of these issues is presented below.

In some respects, Alignment T9 Revised would be easier to construct than Alignment T9. Lowering the profile of the alignment allows vertical construction to be accomplished with conventional equipment, whereas portions of original alignment (those over 80 feet high) would require specialized construction equipment and techniques. In addition, the narrow track center configuration allows the guideway structural elements to be placed more efficiently, requiring less foundation and substructure work and less maintenance of traffic.

Though it is expected that, overall, Alignment T9 Revised will require less maintenance of traffic than Alignment T9, the configuration of the underground segment will have significant construction impacts on Route 123. Because the underground segment passes under Route 123 at a skewed angle and would be constructed using the cut-and-cove method, maintenance of traffic will be much more difficult at this location.

In addition, the inclusion of an underground segment in Alignment T9 Revised would increase the potential for risks associated with unknown subsurface conditions. While extensive testing is conducted prior to construction to identify and locate all subsurface conditions, it is not uncommon for the construction contractors to encounter changed soil conditions, unidentified utilities, changed subsurface water conditions, and unrecorded hazardous materials, all of which could delay construction and increase project costs. While it is customary to assess higher cost and schedule contingencies to underground construction to cover these exposures, it is not reasonable to assign a sufficient contingency to cover every risk, and maintain a level comparison among alternatives.

Underground construction will also reduce the ability to avoid disturbance of utilities or hazardous materials. As a result, Alignment T9 Revised may require relocation of utilities or mitigation of contaminated soil that would not be required under Alignment T9.

Despite these potential concerns, one substantial benefit of Alignment T9 Revised is that it is expected to dramatically reduce the visual impacts associated with Alignment T9. The lower profile would be less visually intrusive than the original alignment, especially along Route 123 between the Capital Beltway and Route 7. In addition, the narrow track centers allow for a single-column support structure in most places along the alignment, eliminating some bulky structural elements that would have visual impacts.

Other benefits of Alignment T9 Revised include a reduction in potential noise impacts in the core of Tysons Corner and elimination of long-term impacts on private property on the north side of the Route 123/Route 7 interchange. However, the relocation of the pocket tracks to the median of the Dulles Connector Road and the DIAAH would increase the potential for noise impacts on residential communities along these roads because of the addition of track switches in these locations. Also, shifting the alignment to the south side of the Route 123/Route 7 interchange would likely have impacts on private property in the eastern and southern quadrants of the interchange that would not be affected under Alignment T9. As noted earlier, there is also a potential for additional impacts on private properties located adjacent to the stations because of increased right-of-way requirements.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The evaluation above indicates that Alignment T9 Revised would offer cost savings, enhanced structural efficiencies, and several other benefits; however, the optimized alignment would also have a number of drawbacks. For example, Alignment T9 Revised would not be consistent with local plans, it could increase right-of-way requirements, and it would have increased potential for noise impacts in certain residential areas.

The original Alignment T9 was developed as a lower cost version of Alignments T1 and T6. Alignment T9 Revised continues to fulfill that goal and offers additional constructibility benefits. Any additional impacts of Alignment T9 Revised are appropriately evaluated against the other Build Alternatives and the Baseline Alternative at the Draft EIS level of analysis.

Therefore, given that:

- Alignment T9 Revised offers cost savings and visual benefits over Alignment T9; and
- The effects of a double-track alignment along Routes 123 and 7 similar to the original Alignment T9—with wider track centers, center platforms, and pocket tracks at the Tysons East and Tysons West stations—will be examined as part of Alignments T1 and T6;

It is recommended that Alignment T9 Revised be carried forward as Alignment T9 for full evaluation in the Draft EIS, replacing the original Alignment T9, and thus allowing for a wider range of configurations to be examined in detail.

As noted earlier, if it is determined that the benefits of the design refinements developed for Alignment T9 outweigh their impacts, several of the refinements could be applied to Alignments T1, T6, and T4 as part of the locally preferred alternative.

Technical Memorandum

BRT Implementation: Guideway and Convertibility Concepts at DIAAH Median Stations

The purpose of this technical memorandum is to document the development and analysis of various conversion concepts for the Bus Rapid Transit (BRT) stations in the median of the Dulles International Airport Access Highway (DIAAH) during the environmental review phase of the Dulles Corridor Rapid Transit Project.

BACKGROUND AND ASSUMPTIONS

The Project Team developed several concepts for converting the median BRT stations to Metrorail stations with a focus on two primary issues. The first issue was related to the different platform heights required to facilitate level boarding for BRT and for Metrorail. The second issue was the desire to maintain BRT service to the extent possible during Metrorail construction, start up, and testing.

The BRT Alternative proposed for the Dulles Corridor Rapid Transit Project would use low-floor vehicles to allow passengers to more easily enter and exit the bus. Approximately 70 percent of the bus would have a floor roughly 12 to 15 inches above the street level. As a result, BRT station platforms would also need to be at this approximate level. Metrorail cars, on the other hand, have a floor that is approximately 3.5 feet above the top of Metrorail. Therefore, if the top of Metrorail and the top of road were at the same level, the Metrorail platform would need to be approximately 2.5 feet higher than the BRT platform. In order to convert the median BRT stations for Metrorail use, it was necessary to develop a concept that reconciled the difference in height between the standard Metrorail platform and the low BRT platform.

A key element in the phased implementation program under consideration for the Dulles Corridor Rapid Transit Project is the ability to maintain BRT service during construction and start-up of the Metrorail Alternative. The Project Team's base assumption in developing the station configuration concepts was that it would take 6 months to build trackwork at the stations, plus an additional 9 to 12 months for Metrorail start up and testing. Therefore, the median portion of the stations could be unavailable for BRT use for a period of 15 to 18 months prior to implementation of rail service. While the BRT stations would not be closed during the conversion period, and alternative service would be provided to the station facilities on the north and south sides of the DIAAH/Dulles Toll Road, several of the station concepts were designed to reduce this period of downtime.

A meeting including representatives from DRPT, WMATA, and the consultant team was held on July 10, 2001 to discuss and assess the potential station configuration concepts with regards to bus operations and station convertibility. In assessing the relative merits of each station concept, three main evaluation criteria were used:

A. Minimize downtime during conversion period;

B. Limit BRT station width to a maximum of 80 feet so as to avoid additional widening of the DIAAH or Toll Road; and

C. To the extent feasible, preserve MWAA's ability to construct and operate the proposed third lane of the DIAAH independently of the Dulles Corridor Rapid Transit Project schedule. In order to meet this criterion, overall station widths of 60 feet or less are necessary.

Each of the station convertibility concepts and their performance relative to these three criteria are presented below. Drawings for each concept are included in **Attachment A.**

STATION CONCEPT #1 – BRT GUIDEWAY ON FILL

For this concept, the 600-foot station platform would be built as a permanent Metrorail platform. Its finished height would be 3.5 feet above the future top of Metrorail. To accommodate BRT service, temporary fill would be constructed in the track bed to raise the driving surface to a height approximately 1 foot below the top of the platform. The fill would be excavated during construction so that tracks could be built in the track bed. When Metrorail construction begins, the median portions of the stations would be unavailable for BRT service. Alternate service would be provided to the station facilities along the DIAAH/Dulles Toll Road.

This concept would have one of the higher downtimes relative to other proposed configurations, because the fill will need to be removed prior to construction of the tracks. However, with a 60-foot cross-section, this configuration would be consistent with the station width criteria outlined above.

STATION CONCEPT #2 – BRT SHARED GUIDEWAY AT OR NEAR TOP OF METRORAIL

For Concept #2, the Metrorail tracks would be constructed prior to implementation of BRT service as street-running track. BRT vehicles could then operate in the same guideway that would later be used for Metrorail service. At least 260 feet of the station platform would be constructed as a temporary platform to accommodate BRT service. This platform would be lower than the Metrorail platform and have a narrower cross-section. The BRT platform would be accessed by temporary stairs and a ramp from the permanent Metrorail platform.

This concept would minimize the downtime of BRT median operations during Metrorail construction because the Metrorail tracks would already be built. BRT operations could continue at the median portion of the stations during the day and Metrorail start-up and testing could take place during non-revenue hours. The station configuration is also consistent with the station width criteria.

Although this concept meets the three evaluation criteria, the configuration of the third rail for Metrorail operation would require a relatively narrow driving lane for BRT vehicles, limiting bus speeds and leaving little margin for driver error (unless a guidance system were used). It would also be necessary to protect the third rail from damage by buses.

STATION CONCEPT #3 – CONSTRUCTION PERIOD GUIDEWAY IN DIAAH/ RETRACTABLE BOARDING BRIDGES

As in Concept #2, at least 260 feet of the station platform would be constructed as a temporary low platform to accommodate BRT service at or near top of Metrorail. The temporary platform would also need to coordinate with the existing roadway grade in order to facilitate operations during conversion. During this period, the BRT guideway would be relocated to the DIAAH, and passengers would board the BRT vehicles via retractable boarding bridges that line up with the vehicle doors. During non-revenue hours, the bridges would be retracted, allowing for construction of the tracks and rail start-up and testing operations.

Because it would allow BRT operations at the median stations to continue during much of the conversion period, this concept would have a short downtime relative to other configurations. However, the station would be approximately 86 to 90 feet wide, which is inconsistent with both station width criteria. Moreover, due to existing DIAAH and proposed rail vertical profiles this station alternative could not be implemented at the Reston Parkway and Route 28 stations. Also, daily operation of the retractable bridges could be very labor intensive.

STATION CONCEPT #4 – SIDE PLATFORM ALTERNATIVE

For this concept, the stations would be configured with side platforms rather than center platforms. Approximately 260 feet of each side platform would be constructed as a temporary low platform to accommodate BRT operations. The platforms would be accessed by temporary stairs and a ramp from the permanent platform. BRT vehicles would operate in running way constructed on the outside of the side platforms, and Metrorail construction and testing would occur between the side platforms without affecting BRT operations.

This configuration would have a near-seamless downtime; however, because the station cross-section would be 89 to 93 feet, the concept is not consistent with the station width criteria. In addition, it was determined that the 15-foot side platform width results in redundant and relatively inefficient vertical circulation between mezzanine and platform, and would also increase capital costs for vertical circulation.

STATION CONCEPT #5 – SIDE PLATFORM WITH SEPARATE RUNWAYS

For this concept, the stations would be configured with side platforms. Approximately 260 feet of each side platform would be constructed as a temporary low platform to accommodate BRT operations. These platforms would be accessed by temporary stairs and a ramp from the permanent platform. BRT vehicles would operate in a temporary running way constructed outboard of the side platforms, and Metrorail construction and testing would occur between the side platforms without affecting BRT operations.

This configuration would have near-seamless downtime; however, because the station cross-section would be 89 to 93 feet, the concept is not consistent with the station width criteria. In addition, a side platform configuration would increase construction and operating costs.

This concept could be sequentially implemented with Concept #4 as described on the previously. Under this scenario, the station would initially be configured as for Concept #4 (without street track), and the configuration would be used for the construction period only, thereby minimizing the time that the wider station footprint is required.

STATION CONCEPT #6 – SIDE CENTER PLATFORM WITH BYPASS LANE

This concept is a refinement of the center-platform plans presented previously. Like concepts #2 and #3, a temporary, low center platform would be used for BRT service. The platform would be constructed with sawtooth bus bays, and the station footprint would be wide enough to allow buses to enter and exit the station independently.

The primary advantages of this concept are improved operational flexibility and failure management (in all other schemes, a disabled bus would obstruct the entire inbound or outbound guideway within the station). However, these operational advantages are less important to the Dulles project, since the BRT operating plan is headway-based rather than time-point service.

This concept would have one of the higher conversion times relative to other proposed configurations. Although street track could be used as the BRT driving surface in this concept, third rail could not be installed until after BRT is relocated. With an 80-foot cross-section, this configuration would be consistent with on but not both station width criteria.

STATION CONCEPT #7 – BI-LEVEL STATION

This concept is intended to provide for continuous passenger service in the median portion of a station during BRT-to-Rail conversion. This station uses a “stacked” configuration, with the BRT guideway and platform at grade, Metrorail directly above, and the mezzanine and pedestrian bridges on the top level.

The Metrorail station is a center-platform configuration with the mezzanine located at the center of the station above the Metrorail platform. The BRT platform is located on grade below the Metro Platform at the west end of the station. This platform is accessed from the mezzanine through the Metro platform by a stair and escalator. An elevator links directly from the mezzanine to the BRT platform.

The primary advantage of this concept is the virtual elimination of median station downtime during conversion. The primary disadvantage is significantly higher construction cost – approximately 60% greater for the median portion of the station in comparison to stations with an at-grade Metrorail platform.

CONCLUSION

After reviewing all station concepts, it was decided that Station Concept #1 is the preferred approach for converting the median stations from BRT use to Metrorail use. Though the concept requires that the median portion of the stations be completely shut down during conversion, it does not require widening of the DIAAH or the Toll Road and it does not limit MWAA’s ability to construct and implement the proposed third lane on the DIAAH at any time. In addition, this concept was preferable to Concept #2 because it would not require reduced running speeds nor would it have the potential for damage to the third rail.

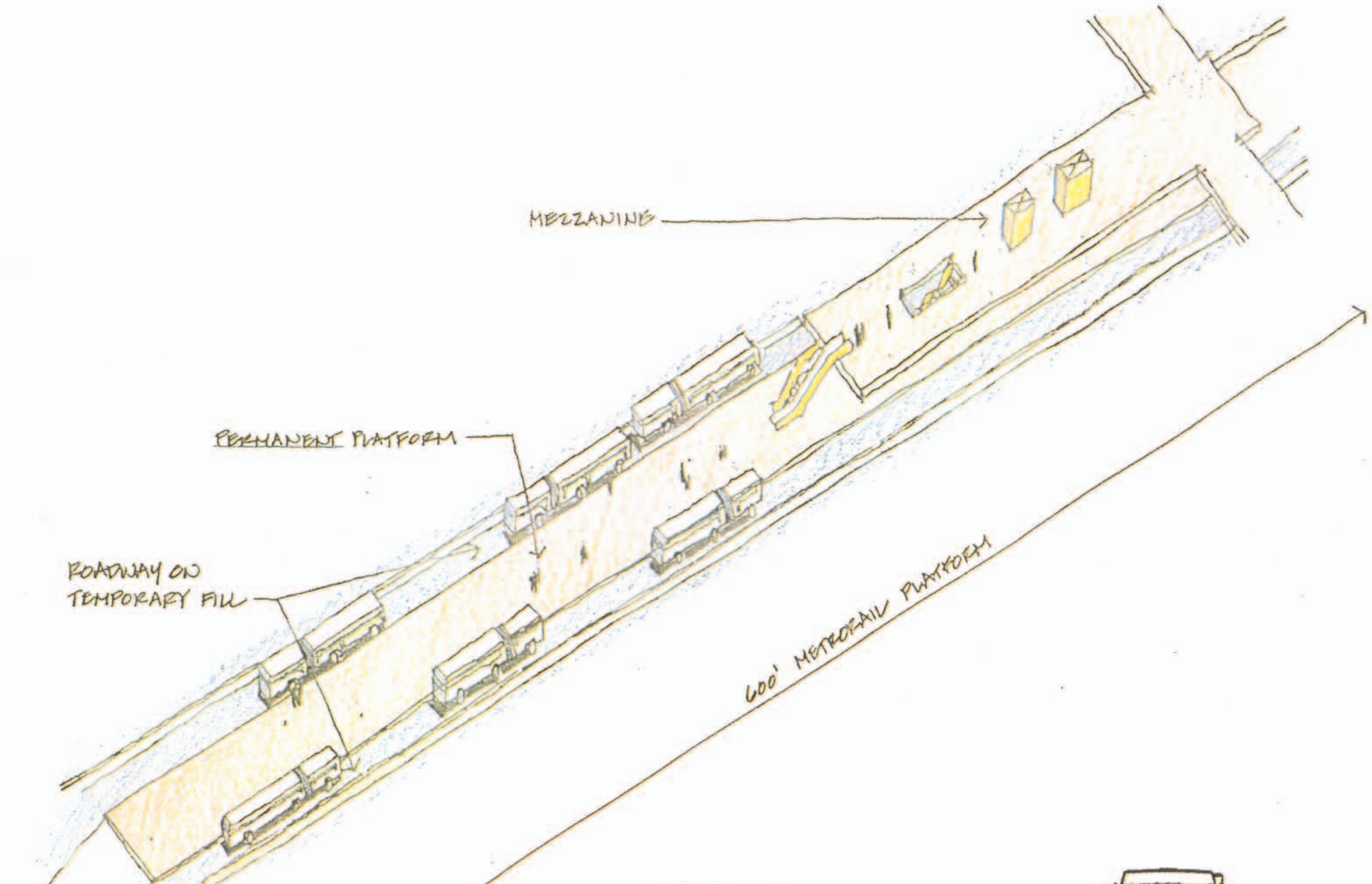
As noted earlier, only the median portion of the stations would be closed during conversion; BRT passenger boarding would be relocated to station facilities adjacent to the DIAAH.

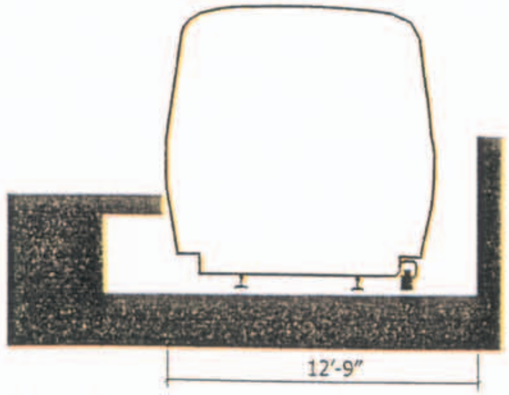
CONCEPT 1

BRT Guideway on Fill

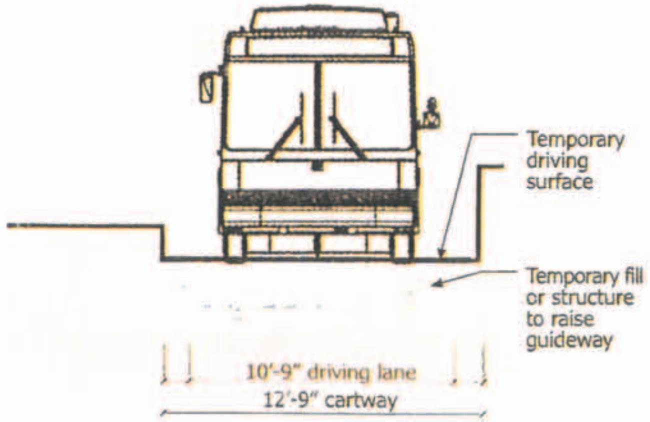
For this concept, the 600-foot station platform would be built as a permanent, full-width Metrorail center platform. Platform height would be 3'-4" above the future top of rail. To accommodate BRT service, temporary fill would be placed in the track bed to raise the driving surface to a height approximately 12"-15" below the top of the platform. The fill would be removed during Metrorail construction so that tracks could be built in the track bed. When Metrorail construction begins, the median portions of the stations would be unavailable for BRT service. Alternate service would be provided to the station facilities along the DIAAH/Dulles Toll Road.

This concept would have one of the higher conversion times relative to other proposed configurations, because the fill would need to be removed prior to construction of the tracks. However, with a 60-foot cross-section, this configuration would be consistent with both station width criteria.

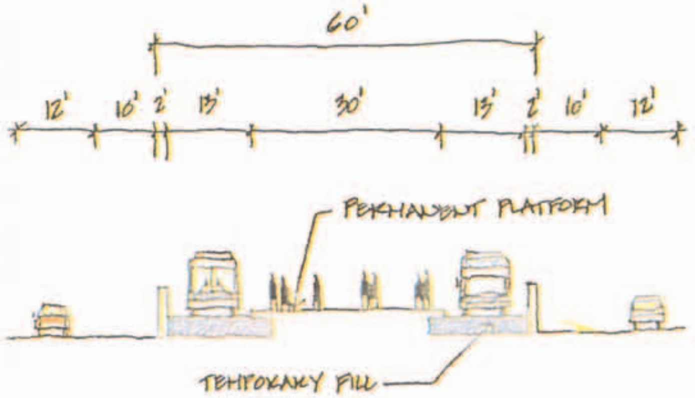




Section A: Metrorail vehicle, guideway and platform

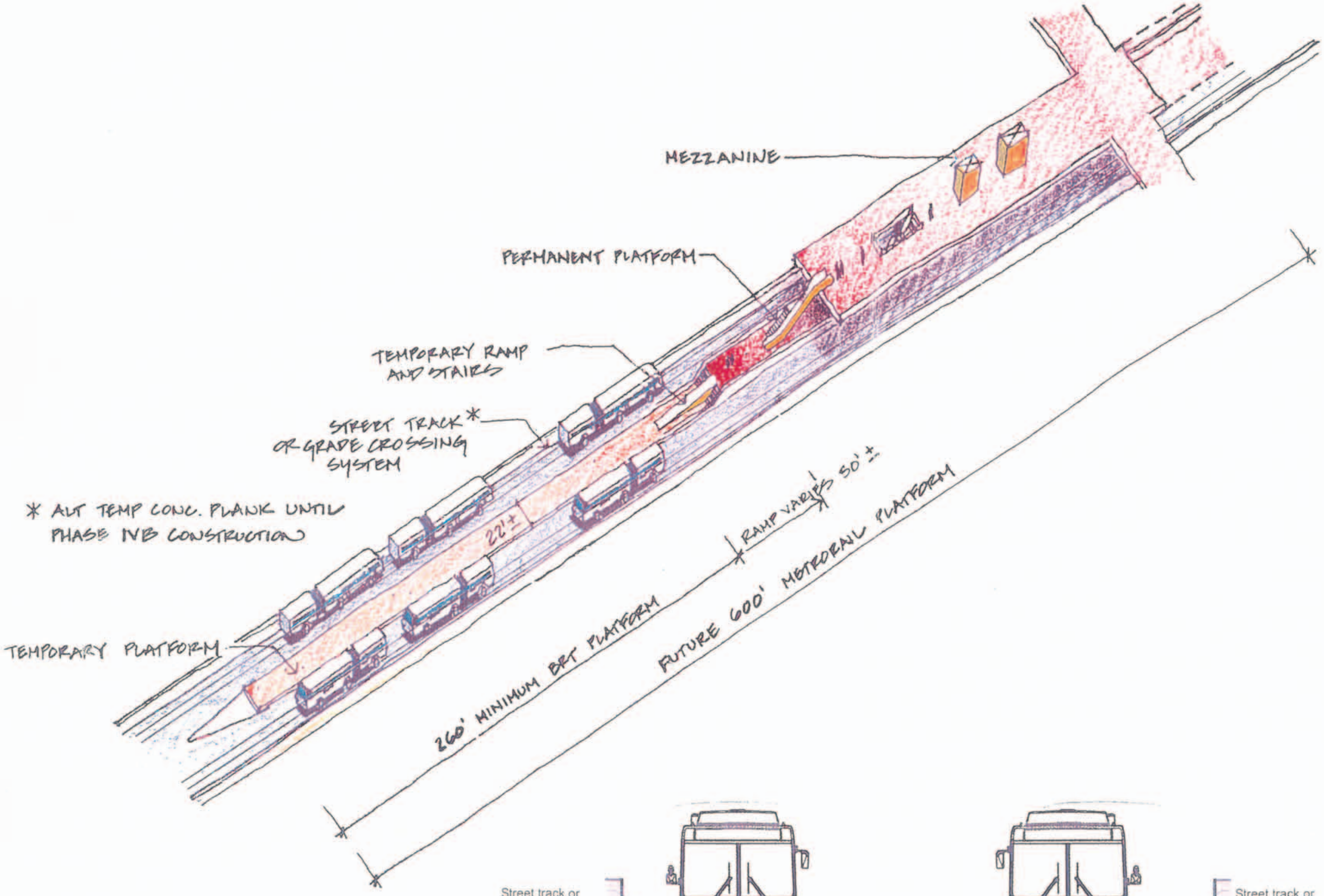

Temporary driving surface
Temporary fill or structure to raise guideway
10'-9" driving lane
12'-9" cartway

Section B: BRT Operation on fill with full-width platform



CONCEPT 2

Shared Guideway on Street Track

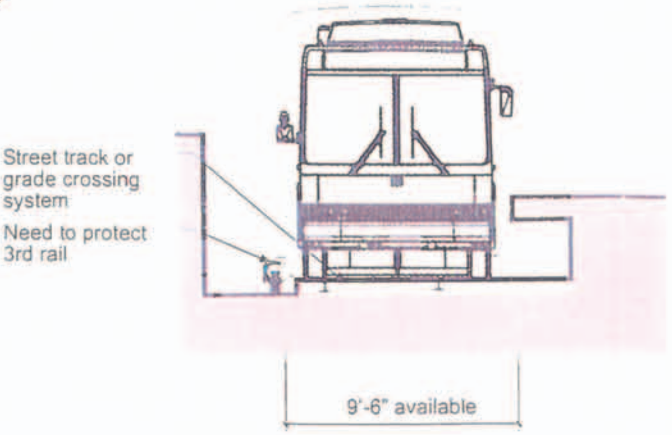

MEZZANINE
PERMANENT PLATFORM
TEMPORARY RAMP AND STAIRS
STREET TRACK * OR GRADE CROSSING SYSTEM
* ALT TEMP CONC. PLANK UNTIL PHASE IVB CONSTRUCTION
TEMPORARY PLATFORM
22'±
RAMP VARIES 50'±
260' MINIMUM BRT PLATFORM
FUTURE 600' METRORAIL PLATFORM

right-door buses with crossovers shown

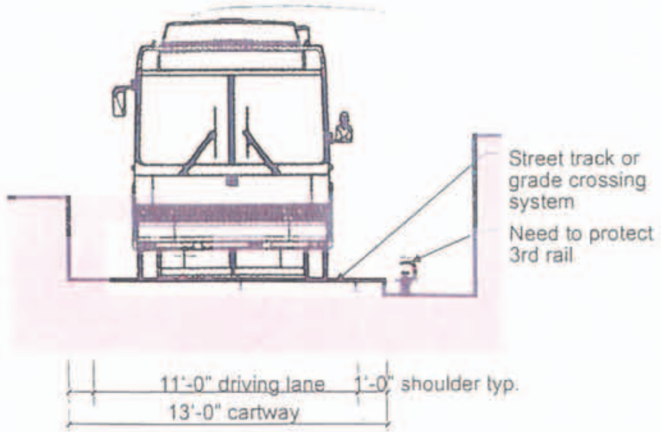
For Concept #2, the rail tracks would be constructed prior to implementation of BRT service as street-running track. BRT vehicles could then operate in the same guideway that would later be used for rail service. A 260' temporary platform would be constructed to accommodate BRT service. This platform would be lower than the Metrorail platform and would be accessed by temporary stairs and a ramp from the permanent Metrorail platform level.

This concept would minimize the downtime of BRT median operations during Metrorail construction because the rail tracks would already be in place. BRT operations could continue at the median portion of the stations during the day and Metrorail start-up and testing could take place during non-revenue hours. If operationally feasible, Metrorail service could begin serving the high portion of the platform, while the temporary platform is replaced.

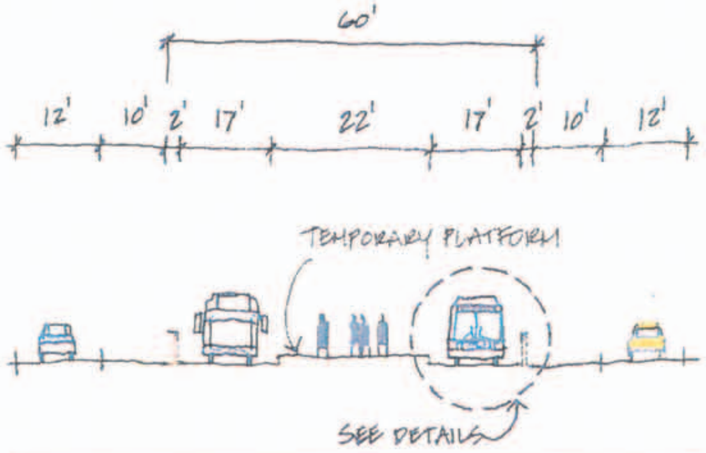
Although this concept meets the three evaluation criteria, the relationship of the third rail to the ultimate Metrorail platform edge leaves relatively little driving space for BRT vehicles (Section A, below left), which would limit bus speeds and leave insufficient margin for driver error (unless an automatic guidance system were used). Additional space could be provided by delaying construction of the full-width Metrorail platform (Section B, below left), but this would increase conversion time because the platform would need to be widened after BRT service is relocated, and before Metrorail service begins. It would also be necessary to protect the third rail from damage by buses. Finally, testing and startup operations would be significantly constrained if conducted exclusively at night.

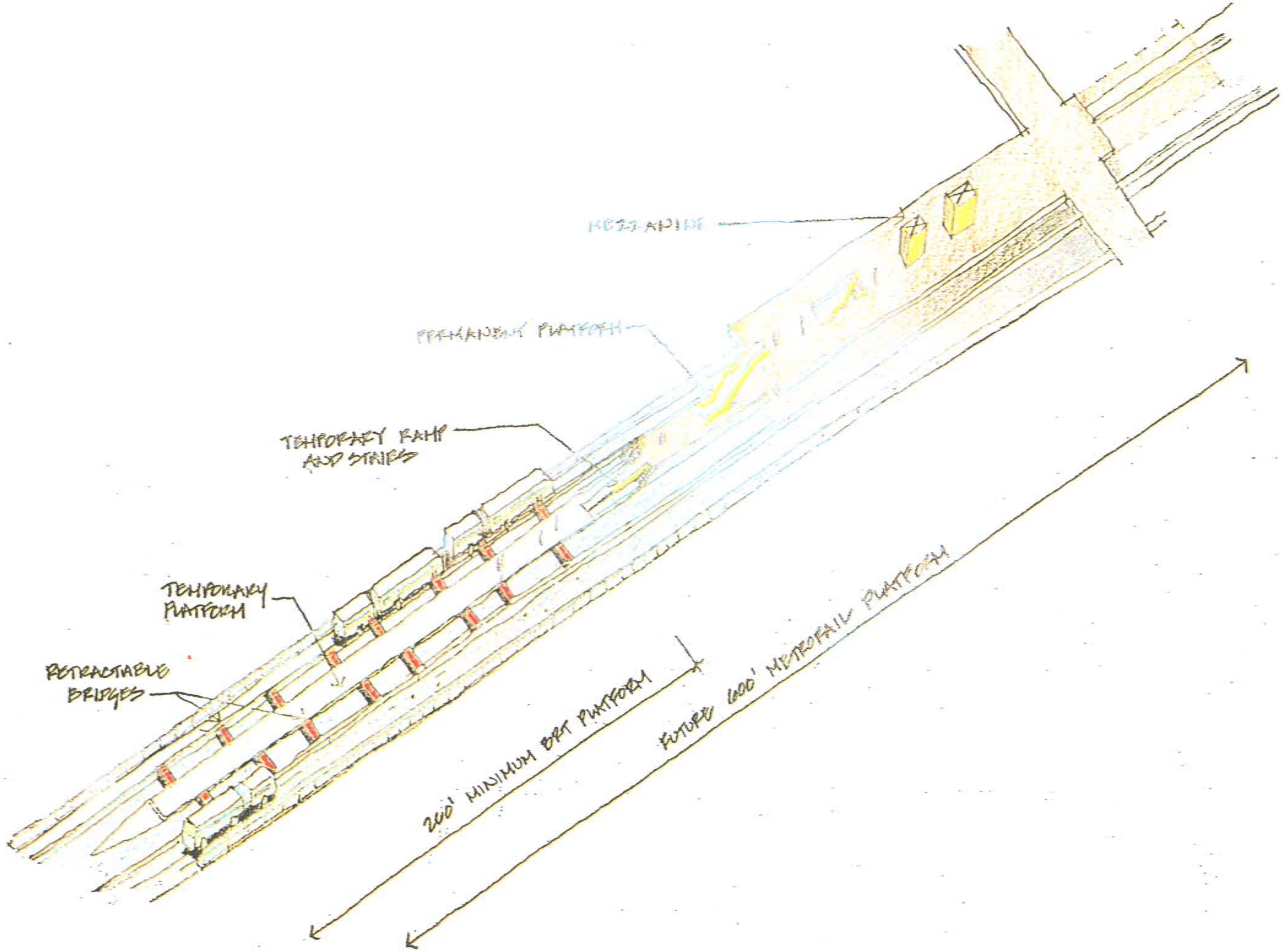


Section A: BRT Operation with full-width platform



Section B: BRT Operation with reduced-width platform



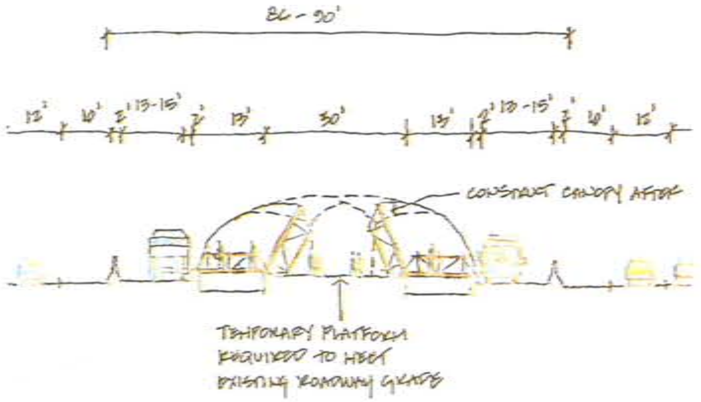

MEZZANINE
PERMANENT PLATFORM
TEMPORARY RAMP AND STAIRS
TEMPORARY PLATFORM
RETRACTABLE BRIDGES
260' MINIMUM BRT PLATFORM
FUTURE 600' METRORAIL PLATFORM

Separate Guideways with Retractable Boarding Bridges

CONCEPT 3

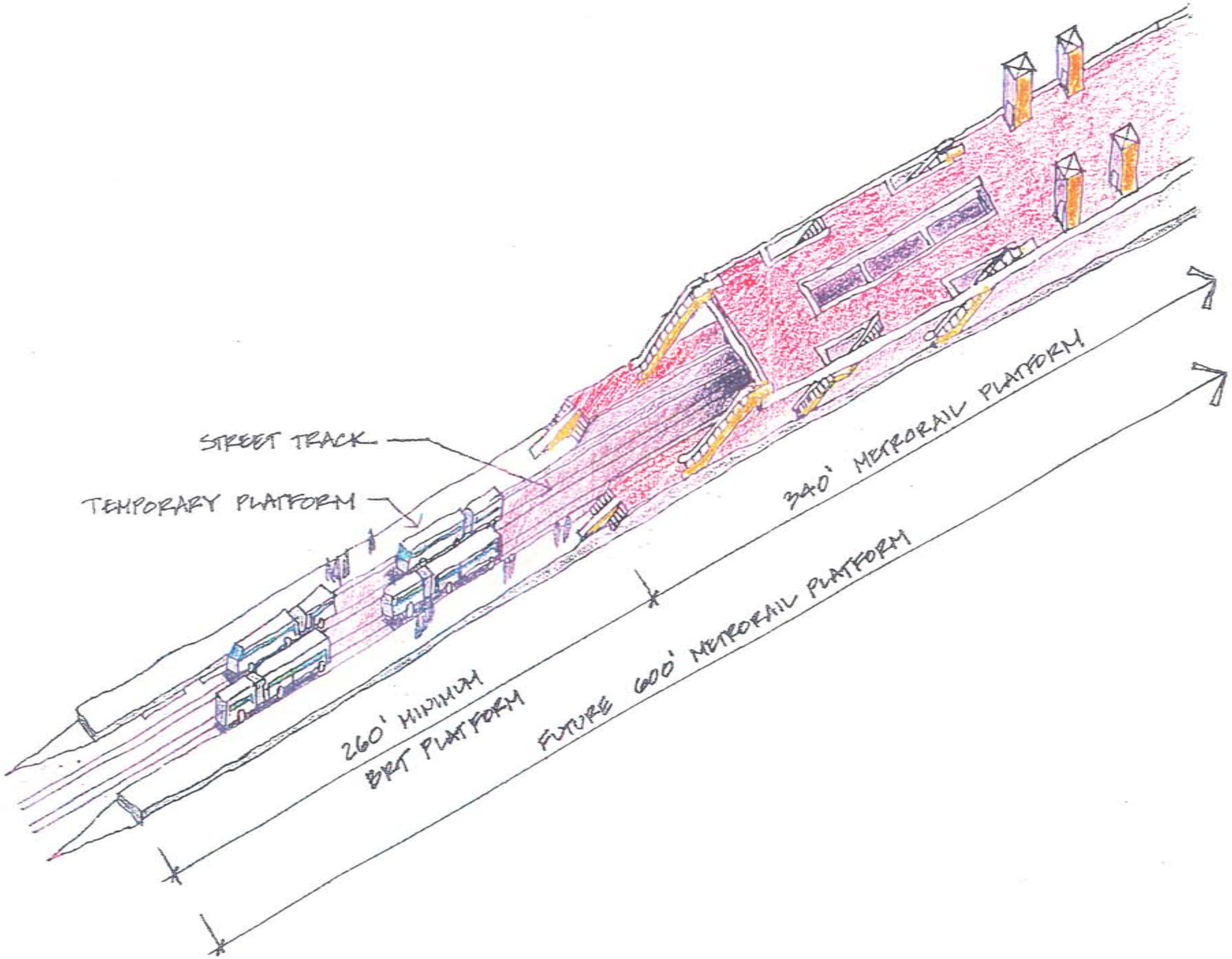
As in Concept #2, at least 260 feet of the station platform would be constructed as a temporary low platform to accommodate the BRT driving surface at or near top of rail. As for Concept #2, the temporary platform would need to be approximately 12-15" above the existing roadway grade. During conversion period, the BRT guideway would be relocated to the DIAAH, and passengers would board the BRT vehicles via retractable boarding bridges that line up with the vehicle doors. During non-revenue hours, the bridges would be retracted, allowing for construction of the tracks and rail start-up and testing operations.

Because it would allow BRT operations at the median stations to continue during much of the conversion period, this concept would have a short downtime relative to other configurations. However, during the conversion period the station width would be approximately 86 to 90 feet wide, which is inconsistent with both station width criteria. Moreover, this station concept could only be implemented at Wiehle Avenue and Herndon-Monroe stations. At the Reston Parkway and Route 28 stations, the proposed rail vertical profile is too high in relation to the existing DIAAH grades to allow use of the retractable bridges. Also, daily operation of the retractable bridges could be very labor intensive.



Side Platform with Shared Guideway

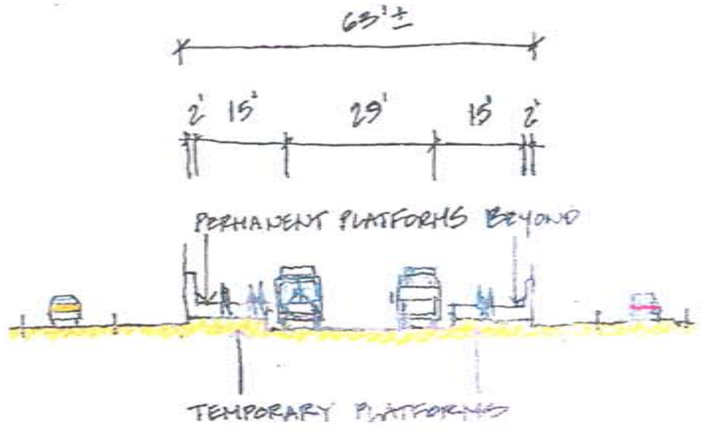
CONCEPT 4



For this concept, the stations would use a side- rather than center-platform configuration. Approximately 260 feet of each side platform would be constructed as a temporary low platform to accommodate BRT operations. These platforms would be accessed by temporary stairs and ramps from the permanent platform. As in Concept #2, BRT vehicles would operate within the Metrorail guideway on street track, and if operationally feasible, Metrorail startup testing would be conducted during off-hours. Once rail service begins, Metrorail passenger operations would be limited to the high portions of the platforms while the BRT platforms are converted for rail use.

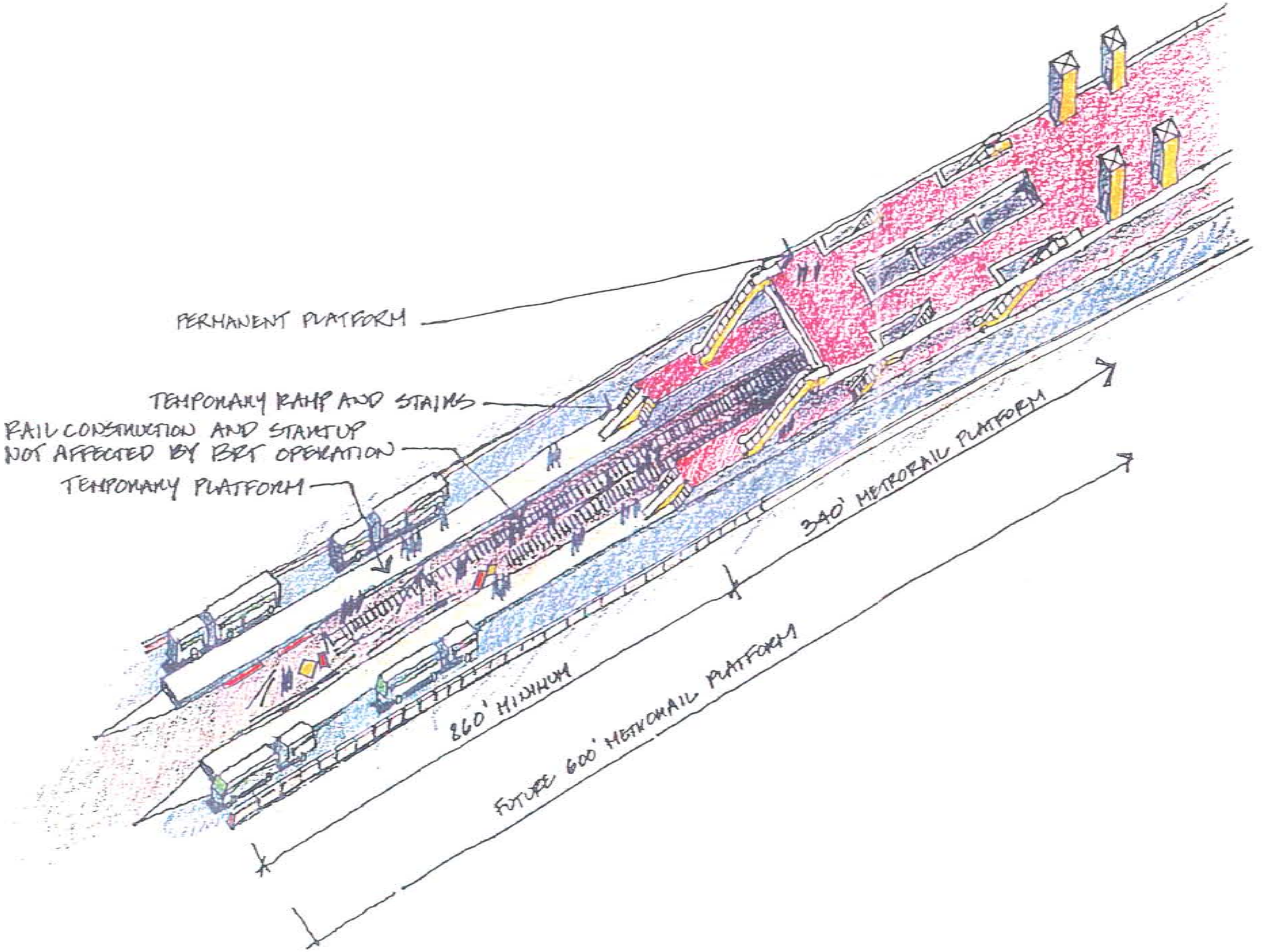
This configuration would permit the use of right-side bus doors without a crossover, and (due to the street track) have a relatively low conversion time. However, also like Concept #2, BRT guideway requirements would limit the width of the Metrorail platform, and/or delay installation of third rail, and/or require a BRT guidance system. Also as in Concept #2, testing and startup operations would be significantly constrained if conducted exclusively at night. The side platform configuration would increase capital and operating costs.

This concept could be sequentially implemented (without use of street track) with Concept #5 as described on the following page.



CONCEPT 5

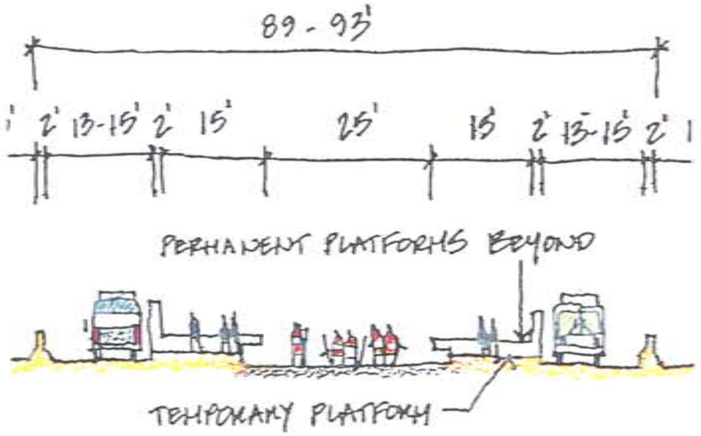
Side Platform with Separate Guideways

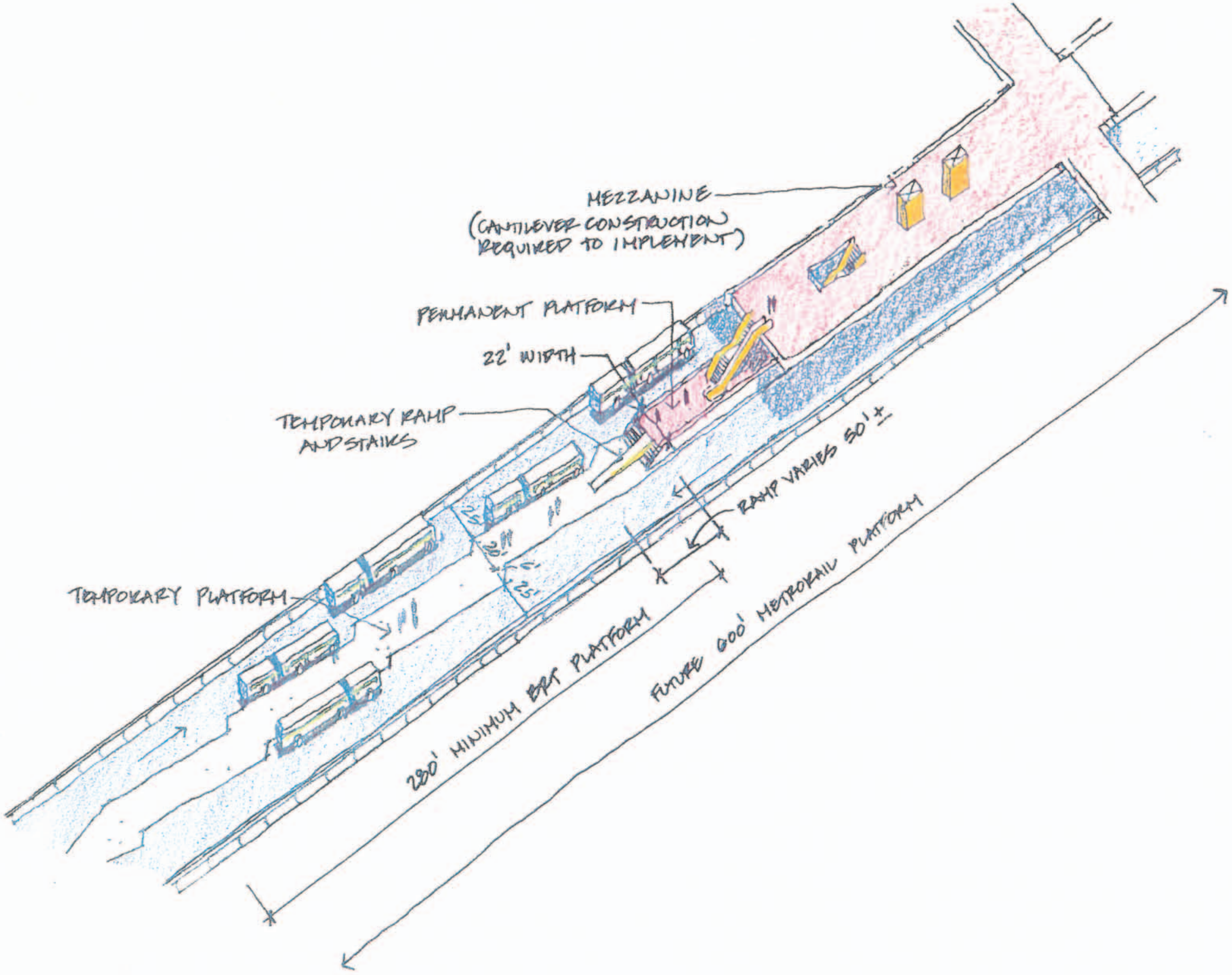

PERMANENT PLATFORM
TEMPORARY RAMP AND STAIRS
RAIL CONSTRUCTION AND STARTUP NOT AFFECTED BY BRT OPERATION
TEMPORARY PLATFORM
340' METRORAIL PLATFORM
860' MINIMUM
FUTURE 600' METRORAIL PLATFORM

For this concept, the stations would be configured with side platforms. Approximately 260 feet of each side platform would be constructed as a temporary low platform to accommodate BRT operations. These platforms would be accessed by temporary stairs and a ramp from the permanent platform. BRT vehicles would operate in a temporary running way constructed outboard of the side platforms, and rail construction and testing would occur between the side platforms without affecting BRT operations.

This configuration would have a near-seamless downtime; however, because the station cross-section would be 89 to 93 feet, the concept is not consistent with the station width criteria. In addition, a side platform configuration would increase construction and operating costs.

This concept could be sequentially implemented with Concept #4 as described on the previous page. Under this scenario, the station would initially be configured as for Concept #4 (without street track), and the configuration shown at left would be used for the construction period only, thereby minimizing the time that the wider station footprint is required.





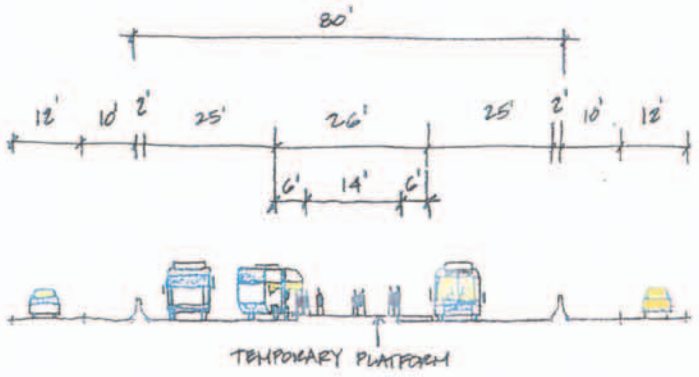
Center Platform with Bypass Lane

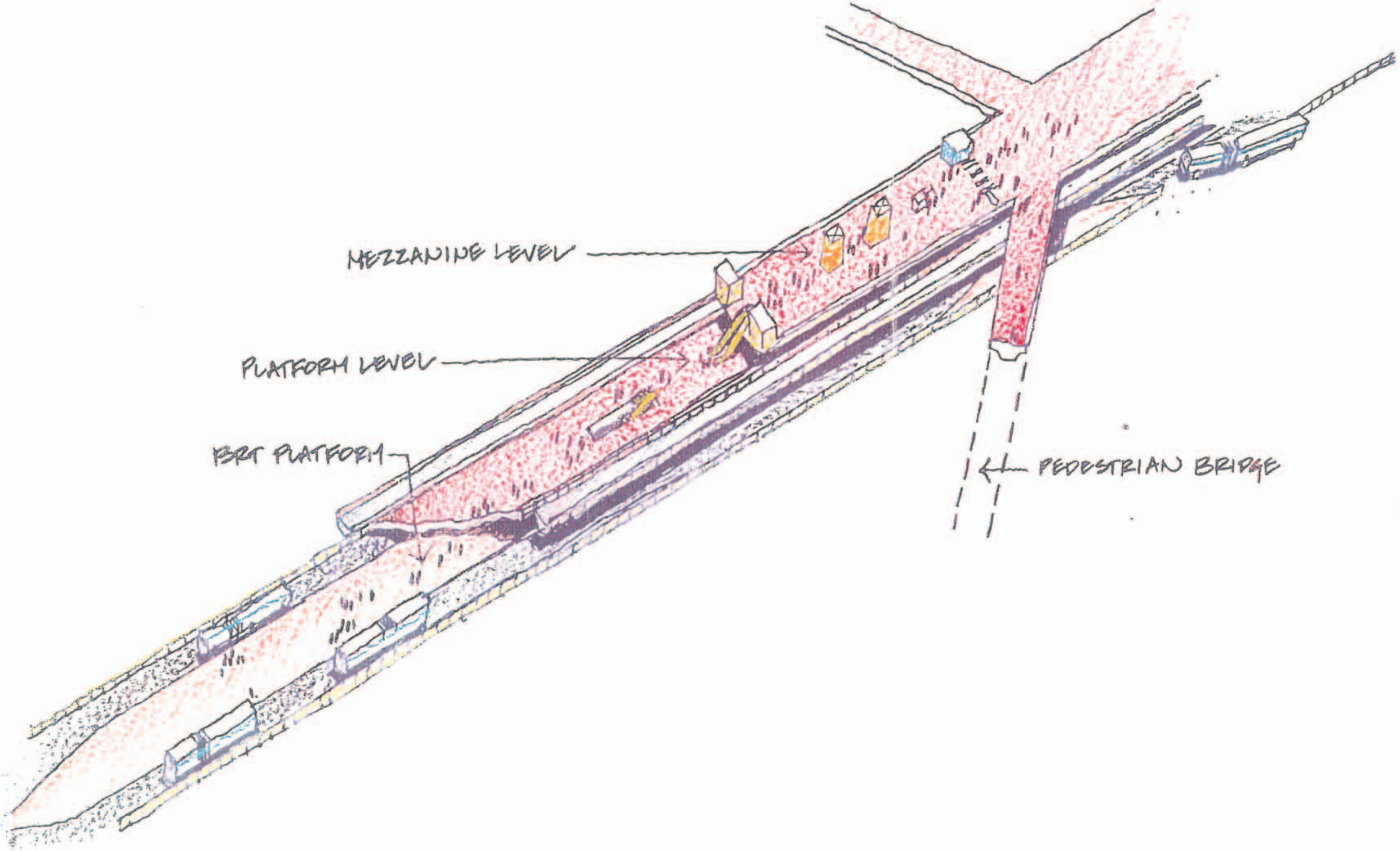
CONCEPT 6

This concept is a refinement of the center-platform plans presented previously. Like concepts #2 and #3, a temporary, low center platform would be used for BRT service. The platform would be constructed with sawtooth bus bays, and the station footprint would be wide enough to allow buses to enter and exit the station independently.

The primary advantages of this concept are improved operational flexibility and failure management (in all other schemes, a disabled bus would obstruct the entire inbound or outbound guideway within the station). However, these operational advantages are less important to the Dulles project, since the BRT operating plan is headway-based rather than time-point service.

This concept would have one of the higher conversion times relative to other proposed configurations. Although street track could be used as the BRT driving surface in this concept, third rail could not be installed until after BRT is relocated. With an 80-foot cross-section, this configuration would be consistent with one but not both station width criteria.





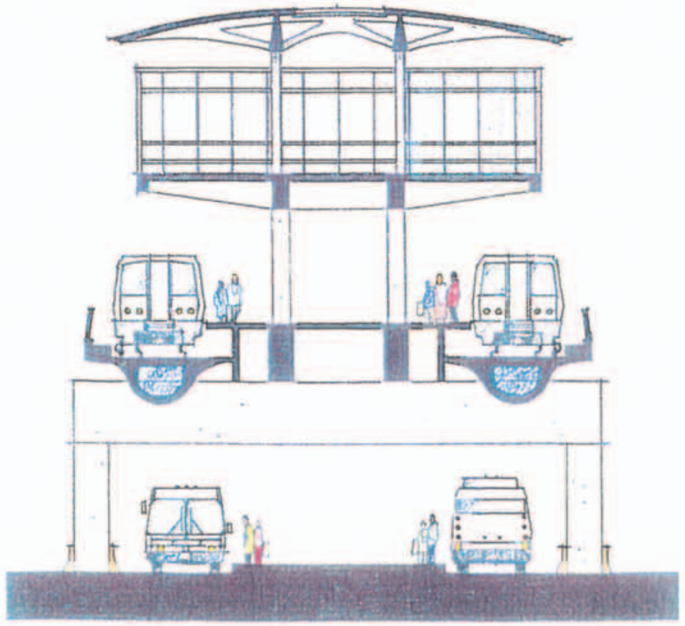
CONCEPT
7

Bi-level Station

This concept is intended to provide for continuous passenger service in the median portion of a station during BRT-to-Rail conversion. This station uses a "stacked " configuration, with the BRT guideway and platform at grade, Metrorail directly above, and the mezzanine and pedestrian bridges on the top level.

The rail station is a center-platform configuration with the mezzanine located at the center of the station above the Metrorail platform. The BRT platform is located on grade below the Metro Platform at the west end of the station. This platform is accessed from the mezzanine through the Metro platform by a stair and escalator. An elevator links directly from the mezzanine to the BRT platform.

The primary advantage of this concept is the virtual elimination of median station downtime during conversion. The primary disadvantage is significantly higher construction cost - approximately 60% greater for the median portion of the station in comparison to stations with an at-grade Metrorail platform.



Supplemental Service and Inspection Yards and Maintenance and Storage Facility Sites Initial Screening Technical Memorandum

The purpose of this technical memorandum is to document the results of the initial screening evaluation of supplemental sites for the Metrorail Service and Inspection (S&I) Yard during the environmental review phase of the Dulles Corridor Rapid Transit Project. Additional sites were selected for review following the November 27, 2001 Steering Committee meeting, where the Virginia Department of Rail and Public Transportation (DRPT) and Washington Metropolitan Area Transit Authority (WMATA) were asked to review alternative yard sites. During this review, the sites will also be evaluated for the possibility of locating the BRT Maintenance and Storage Facility with the S&I Yard.

1.0 DESCRIPTION OF FACILITY

The Metrorail S&I Yard and BRT Maintenance and Storage Facility are critical to implementing transit improvements in the Dulles Corridor. These facilities are typically located at or near the end of the Metrorail or BRT line, and can be located together or in separate locations. All Build Alternatives would require a new facility for the storage and maintenance of the additional transit vehicles (rail and/or bus) needed to provide service in the Dulles Corridor.

The Metrorail facility would be sufficient size to store, inspect, and service 184 Metrorail cars, with the potential for expansion to accommodate future growth. Sufficient capacity does not exist within the completed Metrorail system to store and maintain these new vehicles. In addition, the 75 new buses needed for the BRT Alternative would require a new facility for storage and maintenance.

2.0 BACKGROUND

As part of the alternatives analysis conducted in support of the Draft EIS, a total of 13 sites were evaluated for the S&I yard and MSF. Consistent with the *Evaluation Methodology Report* (November 2000), the analysis consisted of a two-step screening process. Sites that passed through initial and intermediate screening performed the best relative to a variety of important measures of effectiveness and were fully evaluated in the Draft EIS (final evaluation). This process is summarized below and documented in the *Final Alternatives Analysis Report* (May 2001).

Ten potential sites were identified during the *Dulles Corridor Transportation Study*, a Major Investment Study (MIS). These sites plus three additional sites were identified at the beginning of the preliminary engineering and environmental review phase of the project (See Figure 1). During initial screening, nine out of thirteen sites were eliminated because the operation of an S&I Yard and BRT Maintenance and Storage Facility would not be compatible with existing and planned land use, which was primarily residential. In addition, it was also found that if used, two of the nine sites eliminated would impact important water resources in Loudoun County.

Intermediate screening provided a more in-depth evaluation of the four remaining sites as well as additional sites suggested by a stakeholder. Of these sites, Site 7 was found to have the fewest constraints in terms of existing and future land use, cultural and environmental resources, location near the end of the line, and size. This information, together with the positive statements made by Loudoun County representatives regarding the viability of Site 7, led the project team to select it for detailed evaluation in the Draft EIS.

Subsequent and approved (July 2001) changes to the Loudoun County General Plan state that a conditional Transit-Related Employment Center (TREC) or special activity destination is planned for Site 7. The plan identifies that the conditional TREC is intended to provide compact, high-intensity employment uses and/or a special activity use (i.e., a professional sports stadium), with a support retail and service component. A residential component was not included in the development description.

Originally, Site 7 was evaluated with both a BRT Maintenance and Storage Facility and a Metrorail S&I Yard. A detailed evaluation showed that this configuration would have impacts on the 100-year floodplain of Broad Run (designated a major floodplain by Loudoun County), wetlands, and a tributary stream. As a direct result of these environmental constraints, MWAA allowed a portion of airport property, Site 14, to be considered for the BRT Maintenance and Storage Facility. Site 7 was then reconfigured to include only the S&I yard, reducing the effects on the floodplain and eliminating impacts to the wetlands and the tributary stream. Detailed evaluations of both the reconfigured Site 7 and Site 14 are presented in the Draft EIS that was scheduled for release to the public in June 2002.

3.0 SUPPLEMENTAL STUDY

For the supplemental study, six potential sites were investigated for the S&I Yard and BRT Maintenance and Storage Facility, all of which are located in Loudoun County, Virginia. Four of these sites are also located on Dulles Airport property. The sites that are included in the initial screening evaluation below were selected at a pre-scoping meeting in December 2001. Meeting attendees included representatives from WMATA, the Metropolitan Washington Airports Authority (MWAA) and Loudoun County. These new sites are shown in Figure 2 and include the following:

- Y15 – located north of future runway 1L/19R at Dulles Airport;
- Y16 – located on the southside of Route 606;
- Y18 – located on the southside of the Dulles Greenway, and north of the existing Dulles Airport satellite parking lots;
- Y19 – located in the northwest quadrant of the Dulles Greenway/Route 28 interchange;
- Y20 – located on the northside of Route 606; and,

- Y21 – located in the southwest quadrant of the Dulles Greenway/Route 606 interchange.

In addition, WMATA assessed the potential for joint-development over the Metrorail yard on Site 7. This joint-development option was designated as Site 17 because its impacts could be considered separately from those of Site 7. WMATA concluded that development over the yard would be infeasible because development would obstruct the line of site for the yard control tower, and vertical clearances under the development complex may not allow for sufficient lighting. In addition, joint development would raise several concerns related to noise reflection, employee safety, and hazardous materials. For these reasons, WMATA recommended that Site 17 be eliminated from the supplemental study. The project team concurred with this recommendation.

4.0 AGENCY SCOPING MEETING

An Agency Scoping Meeting was held on January 22, 2002. The purpose of the meeting was to provide a brief project overview and status report, and to review and receive input regarding the supplemental yard sites that are currently being evaluated by the Project Team. Agencies represented at the meeting included WMATA, Federal Transit Administration (FTA), Federal Highway Administration (FHWA), MWAA, Federal Aviation Administration (FAA), National Oceanic Atmospheric Administration (NOAA), U.S. Army Corps of Engineers (USACE), DRPT, Virginia Department of Transportation (VDOT), TRIP II (managers the Dulles Greenway), Fairfax County, Loudoun County, and the Town of Herndon.

For the eight sites being evaluated, preliminary issues regarding land use, cost, development potential, environmental effects, transportation compatibility, engineering and operations, and agency/community coordination were identified. It was noted that a "race track" configuration of the S&I Yard is preferred for all sites, and that the collocation of the BRT Maintenance and Storage Facility and Metrorail S&I Yard (if land is available) would be favored.

As part of an agency discussion, representatives voiced comments and concerns about each of the proposed sites. As a result of this meeting, MWAA provided WMATA written comments on Sites 15, 18 and 19. In addition, NOAA provided important information regarding Site 16. These comments have been incorporated into this memorandum.

5.0 SCREENING EVALUATION

As indicated by the screening evaluation included below, some of the locations for the BRT Maintenance and Storage Facility and Metrorail S&I Yard perform better than others relative to several important evaluation criteria. The analysis presented in this section is consistent with the evaluation criteria established for the project.

For the screening evaluation, the sites listed above are compared against the *Loudoun County Revised General Plan*, the *Dulles Airport Master Plan*, and the *Dulles Airport Layout Plan* to ensure that the S&I Yard and BRT Maintenance and Storage Facility will be compatible with future land use and development plans.

Some of the potential bus maintenance facility and Metrorail storage yard locations would result in avoidable impacts to important environmental resources.

Sites 18 and 21 contain wetlands that are part of a very large, forested wetlands system that buffer Horsepen Run. Forested wetlands are considered critical habitats and as such, are protected under the Clean Water Act and Executive Order 11990 (Protection of Wetlands). Substantial impacts to the wetlands on Site 21 would be unavoidable if they were used for the S&I Yard and BRT Maintenance and Storage Facility. On Site 18, the proposed facility could be located in such a way as to avoid substantial impacts, however, the development would still be located in very close proximity to this intact wetlands system. Sites 15 and 20 also contain minor amounts of forested wetlands, while minor amounts of emergent wetlands occur on Site 16.

Some of the proposed locations for the maintenance facility and storage yard may not be consistent with local plans.

Site 16 is currently owned by the National Oceanic and Atmospheric Administration (NOAA), and is located on the southside of Route 606 west of Dulles Airport in Loudoun County. This site is zoned A-3 (a remnant residential zoning classification from the 1970s); however, on the County's General Land Use Plan the future planned land use for this parcel is industrial use. At the agency scoping meeting held on January 22, 2002, NOAA indicated that joint use of their site was not possible because it contains research facilities for the Washington, D.C. weather station. Due to testing facilities that are located on the site, collocation of the weather station and a Metrorail S&I and BRT Maintenance and Storage Facility would not be a viable option.

Site 20 is located on the northside of Route 606, west of Dulles Airport in Loudoun County. It is a large site and could provide many different engineering options for the location of a Metrorail S&I yard and a BRT Maintenance and Storage Facility. Site 20 is currently zoned Planned Development-Transit Related Center (PD-TRC). However, on the County's General Land Use Plan this parcel is planned for industrial use. According to the Loudoun County Planning Department, there are currently no plans for development on this site.

Many of the proposed locations for the maintenance facility and storage yard are not consistent with airport development plans/regulations.

Sites 15, 18, 19 and 21 are all located on Dulles Airport property, either partially or entirely within MWAA's runway approach zones. None of the sites are located within the Federal Aviation Administration's (FAA) runway protection zone, where FAA prohibits development.

The Dulles Airport Master Plan recommends that all runway approach zones be kept free of development. However, as the airport has grown, MWAA has made exceptions to this policy for roadways, navigational aids, and parking lots. According to MWAA, development of other structures in these areas could be permitted if a compelling need for the development is shown, and there are no other suitable alternative sites available. Development that involves the gathering of large numbers of people would not be permitted. Coordination with MWAA is ongoing regarding the use of their property for a Metrorail S&I Yard and/or BRT Maintenance and Storage Facility.

The current Airport Land Use Plan shows that parking facilities may be located on Sites 18 and 19 in the future. Locating an S&I Yard and BRT Maintenance and Storage Facility on these sites would displace between 4,000 and 5,000 parking spaces.

MWAA has stated that to justify dedication of airport land for non-aviation facilities, a compelling case must be made that the site is the only feasible and prudent alternative. The following is a summary of MWAA's written comments/concerns regarding the location of a Metrorail S&I yard and/or BRT Maintenance and Storage Facility on airport property:

- Site 15 - Of the sites located on airport property, Site 15 would be the most compatible with the Airport Land Use Plan, as it is located primarily in the Airport Buffer Zone. Although the intent of the Airport Buffer Zone is to serve as a natural, forested buffer, the Metrorail S&I yard could potentially act as an airport buffer.
- Site 21 – This site would impact the Airfield and the Airport Buffer Zone land uses. However, the impacts to the airfield would be in the less-critical portions of the approach surface. There are compatible land uses that may be placed in this area with authorization from the MWAA Board.
- Sites 18 and 19 – Both of these sites would impact the Airport Buffer Zone, Public Automobile Parking, and Airport Support classifications on the Airport Land Use Plan. Therefore, the location of a Metrorail S&I yard or BRT Maintenance and Storage Facility on either of these sites would be incompatible with the Airport Land Use Plan. Both of these sites are programmed and are in MWAA's budget for development within the next ten years. For these sites to be considered, WMATA would need to provide replacement, structured parking at a yet to be determined location, and thereby keeping whole MWAA's plans for future parking development.

Locating the S&I Yard and/or BRT Maintenance and Storage Facility on airport property would require a change in MWAA policy and the Dulles Airport Land Use Plan. It also would require an FAA release of property to WMATA.

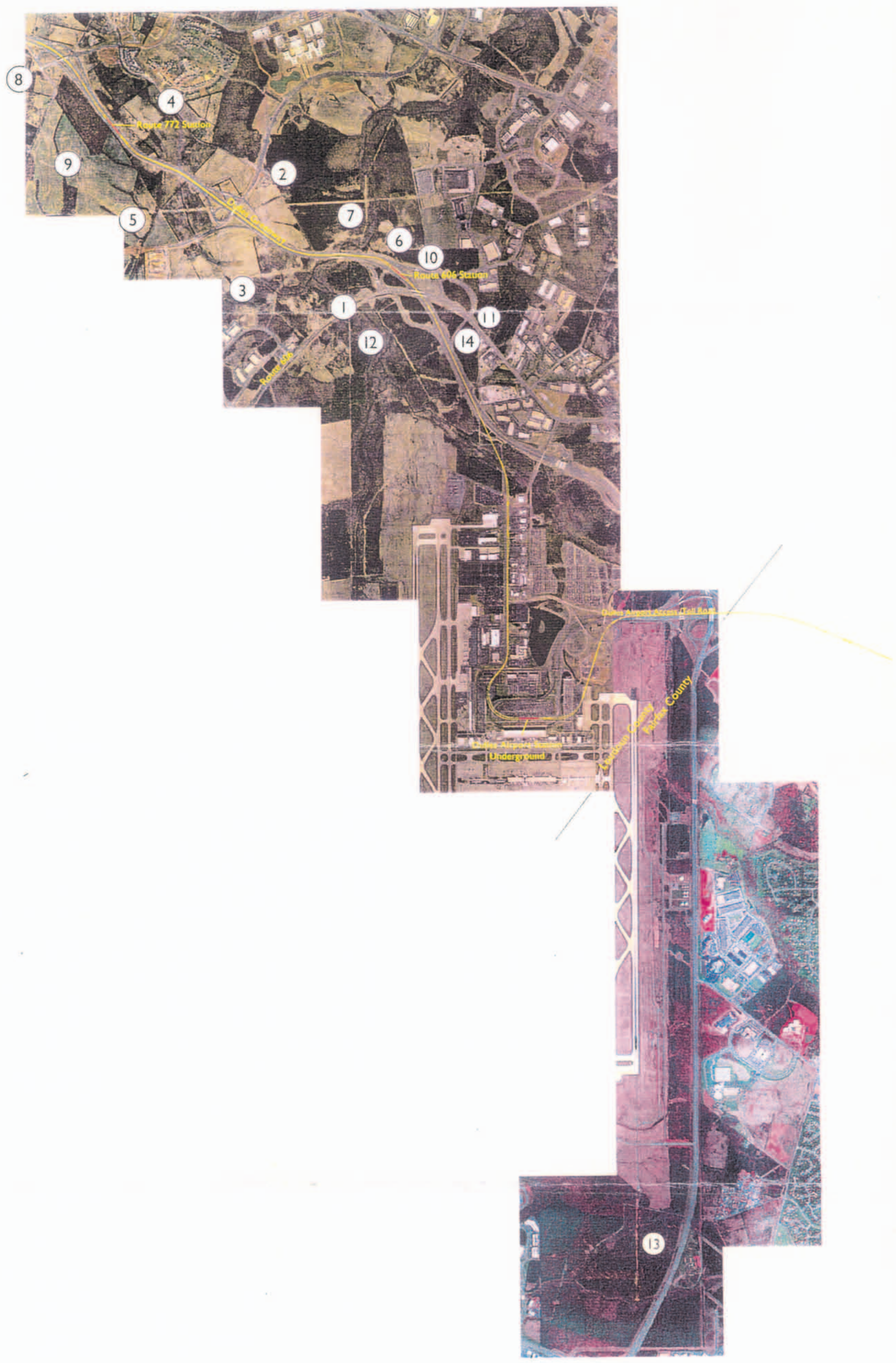
6.0 CONCLUSIONS AND RECOMMENDATIONS

The following list summarizes the findings of the screening process for each supplemental site:

- Site 16 – not compatible with NOAA's plans for the current and planned land use of their site;
- Sites 18 and 19 – not compatible with the existing Dulles Airport Land Use Plan and the future plan for public parking on these sites;
- Site 21 – would result in extensive avoidable impacts to wetlands and important water resources in Loudoun County;

Based on these findings, Sites 16, 18, 19, and 21 are not recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process.

Sites 15 and 20 are recommended for full evaluation in the Draft EIS for the Dulles Corridor Rapid Transit Project. Therefore, at this time, the Project Team will continue data collection and coordination with Loudoun County regarding Site 20, and with MWAA regarding Site 15.



(10) Yard Site

Alignment

1500 0 1500 Feet

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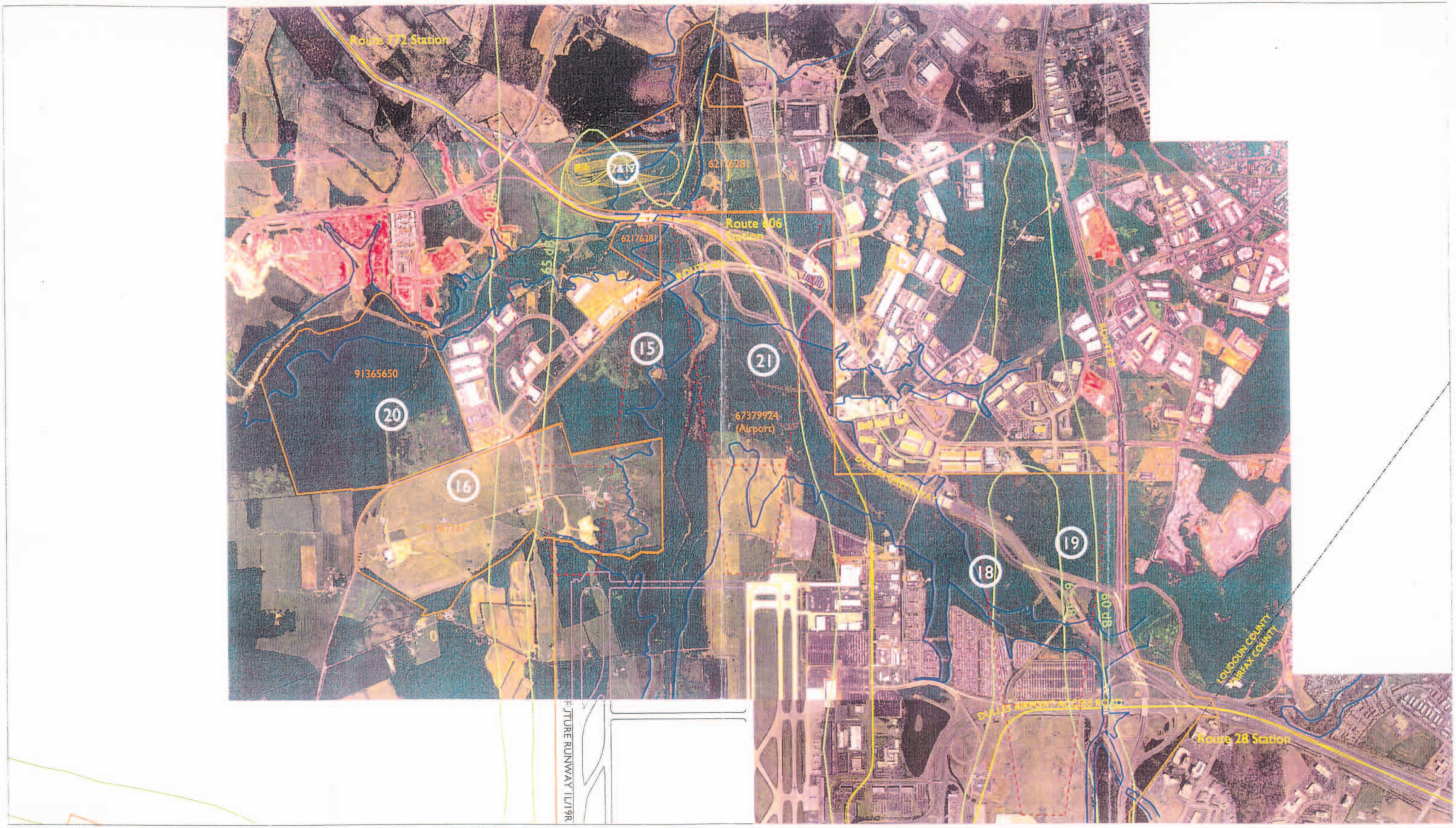
Potential Yard Sites Considered During Screening

Revision Date: 12-06-01

Dulles Corridor
Rapid Transit Project



⑩	Potential Yard Site (Approximate Location)
—	Proposed Metrorail Alignment
—	Airport Noise Contour (Loudoun Co. GIS)
▭	Parcel Boundary
- - - - -	Runway Protection Zone
——	FEMA 100-Year Floodplain

0 1000 2000 Feet

Supplemental Rail Yard Study

Dulles Corridor Rapid Transit Project

Revision Date: 2-11-02

Filename: supp-yard-study.pdf. Aerial photography: Copyright 2000, VARGIS, LLC, Herndon, Virginia; AirPhotoUSA, 2001. All rights reserved.

Appendix B

- Dulles Plan B – Summary of Response to Comments
- Alignment T12
- Alignment T13
- Alignment T14

INITIAL COMMENT

In view of the dismal economics, Dulles Plan B, which is on the web at www.dullesplanb.org, has come up with a range of alternatives that we ask be formally studied in the next revision of the EIS.

DETAILED RESPONSE

Dulles Plan B is a lengthy proposal that details a range of alternatives, which, in essence, represent a modified version of alternatives already studied in detail in the Draft EIS. The primary contention in Dulles Plan B is that:

1) Metrorail is very costly; and

2) A combination of BRT and increased use of the high-occupancy lanes along the Dulles Toll Road could meet the projected demand for transit in the corridor at a much lower cost.

Dulles Plan B includes several distinct elements, and also makes several assertions about the true capacity of BRT, the inability of rail to effectively serve the airport, and better ways to finance the project. These issues are addressed in the more specific responses below.

Comment: Metrorail has a very high subsidy per ride.

"Assume (generously) that this level of ridership is achieved on weekends as well. Divide $230,000,000 by 365 and again by 15,000 and the result is a subsidy of $42 per ride. For a round trip commute, the subsidy is $84." (Plan B Overview)

Response: The Dulles Plan B proponents indicate that the incremental demand for Metrorail over BRT is approximately 15,000 passengers per day. As shown in Table 6.3-8 in the Draft EIS, Metrorail is expected to attract 34,000 to 40,000 more total riders per day than BRT (depending on alignment), and approximately 24,000 to 27,000 more new riders.

To compare the combined annualized capital cost and operating and maintenance costs for the alternatives proposed for the Dulles Corridor Rapid Transit Project, the Federal Transit Administration's uniform method for analyzing costs and benefits was used. As detailed in Chapter 10 of the Draft EIS, the "cost per new rider" calculates the cost effectiveness of the project based on the incremental cost per incremental rider (year 2025 in year 2001 dollars). For BRT 1 it would be $16.62 per new rider, and for Alignment T6 it would be $25.34 per new rider.

In corridors where transit service is very good and ridership is relatively strong before implementation of a major capital investment, the number of new riders attracted to the transit system might not be very high. However, existing transit riders benefit greatly from the improved service levels, access, and travel times generated by the implementation of a new high-capacity transit system. In these cases, the incremental cost per benefiting rider (i.e. all riders carried on the given alternative) is used for comparison. For BRT 1 it would be $4.21 per rider, and for Alignment T6 it would be $11.17 per rider. These costs include the annualized construction costs and yearly operating subsidy for all passengers using the project. The results for all alternatives evaluated in the Draft EIS are presented in Tables 10.1-21 and 10.1-22.

Comment: BRT costs less than rail. Moreover, a high-quality BRT system can be put into place for much less than proposed in the Draft EIS. Suggests that the Transmilenio system in Bogota, Colombia is an example that supports this contention.

"The fact that they have been able to put into place a system that is longer in distance, with many more stations... at one-half WMATA's estimated cost, indicates that the WMATA estimates are padded." (BRT Illustration)

Response: The Transmilenio system is not longer than the proposed Dulles Corridor Rapid Transit Project. It is 38 km (23.6 miles)—approximately the same distance as the Dulles Corridor line.

The evaluation in the Draft EIS confirms that the BRT Alternative is far less costly than the Metrorail Alternative. However, the comparison between BRT costs in Colombia and in the Dulles Corridor is not an appropriate cost comparison. Most Transmilenio platforms are accessed at grade. Dulles corridor stations require pedestrian bridges and associated vertical circulation, which unlike Transmilenio, usually include both elevators and escalators. Dulles costs also include structured parking at certain stations, new acceleration/deceleration ramps for station access along the DIAAH, and Metrorail vehicle costs for the increased ridership on the Orange Line that would result from the BRT Alternative.

In addition, the cost of construction varies between countries because construction practices—particularly labor costs—are very different.

Other reasons for differences between the Transmilenio costs and the projected Dulles Corridor Rapid Transit Project costs are related to the acceleration of Dulles costs to year-of-expenditure dollars. Transmilenio began operation in December 2000, therefore published costs for that project typically represent dollar values in the late 1990s. Dulles costs reflect the assumed effect of inflation on the value of the dollar over the next five years. Therefore, the cost estimates between the two systems are not comparable.

Comment: The capacity of BRT could be increased by using larger vehicles. Suggests that by using the same buses as in the Bogota Transmilenio system, capacity could be dramatically increased at a lower cost.

"WMATA has also inflated the cost of BRT by assuming the use of 60 foot diesel buses with 61 passenger capacity. There is no reason given the straight right of way not to use 160 seat articulated buses, the capacity of two metrorail cars. One of these buses in shown in the EIS navigating a tight turn in France." (True BRT)

Response: Transmilenio uses 60-foot articulated vehicles—the same length as proposed for the Dulles project. The French bus shown in the Draft EIS is also a 60-foot vehicle.

The Transmilenio vehicles are not "160 seat buses"—they accommodate approximately 160 passengers (43 seated and 114 standing). This standee load is based on an area of 4 persons per square meter, or 2.7 square feet per person—a standard that most riders would find very uncomfortable (at this density contact with other persons is unavoidable). Moreover, the Transportation Research Board's *Transit Capacity and Quality of Service Manual* (1999) notes that, "High-speed bus service on busways and HOV lanes should not allow standees, so capacity calculations should assume that every passenger may be seated" (Page 2-41).

A high reliance on standees is characteristic of a system with short trip lengths—such as Transmilenio, not Dulles. Within the Dulles Corridor, many trips are projected to cover at least two-thirds of the length of the corridor (20 to 30 minutes). Standing for this length of time on a bus would be unacceptable to many travelers. Moreover, because BRT does not have the same quality of ride as Metrorail, loading passengers to a "crush" level would not be tolerated by most patrons.

Comment: The BRT portion of the Dulles Plan B proposal includes the following elements:

- **BRT 1 without the excesses that relate only to rail;**
- **Special purpose buses for BRT that will provide more comfort and larger capacity;**
- **Better service to the airport, including direct service to the departure and arrival levels;**
- **Enhanced bus stops with bus information and display system and shelters (implication is for all transit service throughout corridor);**
- **Express bus service from Route 28 BRT Station to the Air and Space Museum Annex;**
- **Experimentation with express service off the Access Road direct to West Falls Church and similar services as alternatives to feeding into BRT stations; and**
- **More money for traffic light signalization.**

Response: These elements were evaluated as part of the BRT Alternative in the Draft EIS or are being evaluated as part of studies that are independent of the Dulles Corridor Rapid Transit Project. Other elements proposed in Dulles Plan B are minor modifications of the BRT Alternative that could be explored in further detail if BRT were selected as the Locally Preferred Alternative (LPA).

The Draft EIS includes a full evaluation of BRT 1 and a variation of this alignment that includes reduced-scale stations (BRT 2). Although the combination of alignment and station scale proposed in Dulles Plan B was not specifically evaluated, the LPA selected by decision-makers can be a combination of different elements selected from the various alternatives and alignments evaluated in the Draft EIS, as noted on Page 1-37. If a combination of the BRT 1 alignment with BRT 2-scale stations was selected as the LPA, any changes in benefits, impacts, or costs for this alternative would be fully evaluated and documented in the Final EIS.

WMATA has been incorporating ITS information capabilities, such as smart cards, next train arrival information, and escalator/elevator outage information, into the existing Metrorail system. Similar information technologies would be incorporated into the final design of the LPA, whether it is BRT or Metrorail.

The need for shelter improvements and better provision of information throughout the regional bus system (including bus transit in the Dulles Corridor) is being examined as part of WMATA's Regional Bus Study. This study is a comprehensive examination of existing bus service throughout the entire Washington metropolitan region. This study focuses on transit services provided by numerous jurisdictions, including Fairfax and Loudoun counties. The objective of the study is to identify a comprehensive bus service plan to meet future needs for the region, as well as associated facility improvements. These improvements could include physical or technological improvements that facilitate bus operations in congested environments. Potential traffic signalization changes to improve transit mobility/reliability are among the elements being evaluated.

Additional information on the study's status and findings can be found at http://www.wmata.com/about/expansion/bus_study.cfm.

The proposed addition of more point-to-point express services to the BRT operating plan, in lieu of some feeder services, could be explored in more detail in the Final EIS if BRT is selected as the LPA.

Although it was suggested that only "some paint at the bus loading zones at the arrives and departure level" (Airport Impacts) would be required to operate BRT service to the arrival and departure levels, such a service modification would actually be much more involved and costly. Because the proposed BRT system includes off-board fare collection, it would be necessary to construct additional fare arrays at the departure and arrival levels to directly serve these areas. This change would add expense to the project and could hamper circulation in the airport terminal. The current location and configuration of the BRT station at the airport has been carefully coordinated with the Metropolitan Washington Airport Authority (MWAA). Because of circulation concerns, MWAA would be unlikely to allow a second station at the terminal.

The changes required to serve the arrival and departure levels also could impact the architectural integrity of the historic building. Such changes would need to be coordinated with the State Historic Preservation Officer.

DRPT is currently evaluating dedicated service options for travel between downtown Washington, D.C., West Falls Church, and the National Air and Space Museum Annex. The final determination of service would be made by DRPT and the Museum, and would be outside the scope of the Dulles Corridor Rapid Transit Project.

The largest-capacity BRT vehicles that could be used in the Dulles Corridor are 80-foot bi-articulated buses with a capacity of 80 seats. The potential effects of such a capacity increase on ridership are explored in more detail on the following pages. However, it should be noted that BRT facilities at West Falls Church are greatly constrained by space considerations within the existing facility. Use of bi-articulated buses would be subject to analysis of turning radii, and the quantity of berths required for these larger vehicles.

Comment: BRT, as proposed in Dulles Plan B, should be implemented along with measures that encourage increased use of the high-occupancy vehicle (HOV) lanes on the Dulles Toll Road. These measures include:

- **BRT stations that accommodate ridesharing zones; and**
- **Experimentation with high-occupancy lanes, including changing the number of lanes in the corridor, the HOV requirements, the peak hours, and peak hour pricing.**

Response:

Ridesharing Zones

As shown in Table 6.2-1 on Page 6-23 of the Draft EIS, projected use of the HOV lanes on the Dulles Toll Road is not expected to change from current usage, either under the Baseline or the Build Alternatives, while traffic in the general purpose lanes will increase, exceeding the capacity of these lanes. If travelers who currently drive alone could be encouraged to rideshare, then it is likely that traffic in the general purpose lanes could be reduced.

However, neither DRPT, WMATA, nor VDOT could develop facilities with the express purpose of encouraging just-in-time ridesharing (also known as "slugging" or casual carpooling) because of the tremendous liability risk associated with such activities. While these agencies recognize the benefits that have been gained in the I-95/I-395 corridor through this informal ridesharing arrangement, the random pairing of drivers and passengers inherent in this form of commuting presents risks that most public agencies are not prepared to assume.

Moreover, there would be numerous issues associated with incorporating just-in-time ridesharing zones near BRT stations. Zones could either be accessed from the DIAAH or from the Dulles Toll Road. The issues for each configuration are outlined below.

- It would not be practical to access rideshare zones from the DIAAH, because the roadway is currently restricted to airport-only traffic. If additional access points were provided for HOV drivers, it would be difficult to enforce use of the roadway.
- If the zones were located along the HOV lane at the inner edges of the Dulles Toll Road, they would require a left-hand merge and diverge maneuver. The American Association of State Highway and Transportation Officials (AASHTO) discourages designs that require left-hand merge and diverge maneuvers, and in this case such maneuvers would need to be performed by private vehicles at frequent intervals.
- If the rideshare zones were located along the outer edges of the Dulles Toll Road, they would likely obstruct interchange ramps, and after picking up passengers, drivers would have to weave across three lanes of traffic to access the HOV lanes because it is not feasible to locate the HOV lanes along the right-hand side of the travel way.

In addition, it would not be possible to add rideshare zones along the Toll Road without expanding the roadway, because the aggregate width of the BRT stations, the six-lane DIAAH, and the Toll Road, including shoulders, uses all of the available right-of-way along the Toll

Road. This expansion would have substantial costs and impacts on ramps, overpasses, and adjacent properties.

Value Pricing

Proposals to allow travelers driving alone to use the HOV lanes during peak hours for a fee ("value pricing") would require in-depth study by VDOT. In addition to determining whether value pricing would be feasible or have positive transportation system management benefits, numerous issues would have to be considered.

Barrier-separation is a primary consideration for implementing value pricing in the Dulles Corridor. All value pricing systems currently in operation in the United States use some form of barrier separation to facilitate tolling and enforcement. Installing a barrier with proper shoulders (at least 10-foot inner and outer shoulders) for both the HOV lane and the general purpose lanes would not be possible along the Dulles Toll Road without widening the entire facility. Such widening would be costly and would have serious impacts on area residents. Though it is possible to install a barrier without shoulder buffers (as along SR 91 in California) this configuration would have safety implications and would need to be approved by VDOT and possibly the Federal Highway Administration.

In theory, electronic tolling technology makes it possible to implement value pricing systems without using barrier separation. However, no such systems are currently in operation in the U.S., and there are several complications and technological issues that would need to be resolved.

- How would the pricing structure and the deployment of the roadside terminals be set up to prevent drivers from weaving in and out of the high-occupancy toll (HOT) lane to avoid paying the toll?
- Need to ensure that the HOT roadside terminals do not accidentally read the transponders for travelers in the concurrent general purpose lane who are not using the HOT lane on a given day. (Some travelers may have transponders so that they can use the HOT lane if they choose. However, on days when they aren't using the HOT lane, they don't want to get charged simply because they were traveling in the adjacent lane.)
- Enforcement – when people can weave in and out of the lane, how do enforcement officers know if SOV drivers have paid or not?

Other issues include equity concerns, both geographic and economic. In Minnesota, value pricing options have been under study since the early 1990s. In the recently released *Summary of the Work of the Minnesota Value Pricing Advisory Task Force*, equity concerns are explained as follows:

> "Equity is a major concern with pricing projects. This can take several forms: that people that use certain roads have to pay extra while people that use other roads don't, that the toll places a greater burden on the poor than on the rich, and even that toll lanes should not be available because wealthier people would gain an unfair advantage by being able to pay to bypass congestion." (*Curbing Congestion*, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, 2002, Page 9)

The Minnesota task force has recommended several options for dealing with these concerns, including using toll revenues to subsidize transit (as suggested in Dulles Plan B), giving passes to very low-income households, and using an income-based toll. However, equity issues remain a major concern and have effectively defeated HOT proposals in other locations, including several that were under study in Maryland.

As the owner and operator of the Dulles Toll Road (and other major HOV facilities in the region), it would be VDOT's responsibility to fully evaluate and implement any value pricing systems along the corridor.

Comment: As proposed in Dulles Plan B, BRT in combination with increased use of high-occupancy lanes should meet the projected demand for the foreseeable future. *(True BRT)*

Response: The response for this comment is divided into subsections. First the potential capacity provided by the Dulles Plan B combination of BRT and increased HOV use is explored. Then the ability of this combination to meet the projected demand for Metrorail is assessed.

The Combined Capacity of BRT and Increased HOV Use

The ability of BRT and increased use of the HOV lanes to meet the projected demand for Metrorail will depend on the capacity that can be provided by this mode combination during the peak hour.

As discussed previously, increasing the size of the BRT vehicles to 80-foot, 80-seat bi-articulated buses would provide for a maximum person-moving capacity of 6,400 passengers in the peak hour in the peak direction (based on 80 buses an hour, which results in a bus running in the guideway every 45 seconds, on average).

The current and projected use of the HOV lane on the Dulles Toll Road is 1,200 vehicles in the peak hour for all alternatives (as indicated in Draft EIS Table 6.2-1). If we assume there are 2.2 persons per vehicle, then during the peak hour, the HOV lane carries 2,640 persons (2.2 X 1,200). This "base" level of HOV use applies to the Baseline Alternative and all Build Alternatives, including Metrorail, and therefore, is not included in calculations of the additional person-moving capacity provided by increased use of the HOV lane.

For freeway facilities with a free-flow speed of 70 to 75 miles per hour (posted speed 65 miles per hour), the Transportation Research Board's 2000 edition of the *Highway Capacity Manual* assumes a maximum capacity of 2,400 passenger cars per lane per hour. However, the manual notes that facilities are rarely designed to operate at their maximum capacity, because operations are generally poor at this level of service (LOS E), and prone to highly variable speeds and backups. Therefore, in order for the HOV lane to remain an attractive alternative to the general traffic lanes, it should not operate at its maximum level of capacity.

As noted, LOS E represents operation at or near capacity, and, as described in Table 6.1-1 in the Draft EIS, speeds at this level of service can be greatly reduced and conditions are very congested. Though LOS D still represents congested conditions, in practice, it is widely considered an acceptable level of service. At LOS D, urban freeway facilities can be assumed to operate at 75 to 90 percent of their maximum capacity (*2002 Quality/Level of Service Handbook*, Florida Department of Transportation, Page 86).

It was assumed for this capacity analysis that, under ideal usage conditions, the HOV lane would operate at 80 percent of its maximum capacity. Therefore, the maximum number of passenger cars that can operate in the HOV lane under the increased use scenario is 1,920 cars, an increase of 720 cars over current usage.

Three options for increasing HOV use were examined.

- **Option X** – Assumes that current HOV 2 restrictions remain in place. Vehicle occupancy would stay at 2.2 persons per vehicle.
- **Option Y** – Assumes that VDOT decides to implement a value pricing system to get solo drivers off the general purpose lanes and onto the HOV lanes. Travel for HOV 2 remains free, and single-occupant vehicles can use the HOV lane for a fee. Vehicles occupancy would shift to 1.7 persons per vehicle (a generous assumption since the majority of vehicles using the lane would likely have single occupants).
- **Option Z** – Assumes a different value pricing system. Travel for HOV 3 would be free; HOV 2 and single-occupant vehicles could use the HOV lane for a fee. Vehicle occupancy would be 2.5 persons per vehicle (again, a generous assumption given the nature of the corridor).

The projected increases in person-moving capacity during the peak hour resulting from increased use of the HOV lanes under each of these scenarios are summarized in Table 1 on the following page. For comparison purposes, the capacity provided by Metrorail (as defined in the Draft EIS) and BRT with larger-capacity vehicles is also summarized in the table.

Table 1. Mode Capacity Comparison

Mode	Basic Peak Hour, Peak Direction Assumptions	Peak Hour Passenger Capacity (passengers per hour)	
Metrorail	8-9 trains per hour 8 cars per train 120 passengers per car	8,640	
BRT	80 buses per hour 80 passengers per bus	6,400	
HOV Lane		Total	Increase Over Base
Base	1,200 vehicles in lane 2.2 persons per vehicle	2,640	–
Option X	1,920 vehicles in lane 2.2 persons per vehicle	4,224	1,584
Option Y	1,920 vehicles in lane 1.7 persons per vehicle	3,264	624
Option Z	1,920 vehicles in lane 2.5 persons per vehicle	4,800	2,160

If all the new HOV users come from the general purpose lanes (rather than switching from BRT or other transit modes), then increasing HOV use could potentially remove a number of vehicles from the general purpose lanes. For example, under Option X, 1,584 people switch to the HOV lanes. If these people were previously traveling in the general purpose lanes at 1.1 persons per vehicle, then the shift to the HOV lane would decrease the number of cars in the general purpose lanes by 1,440 cars (1,584 ÷ 1.1).

However, it is not clear that incentives to increase HOV use would appeal only to travelers driving alone rather than using BRT (or rail). These new ridesharers could very well switch from BRT or other transit modes, reducing rather than enhancing the overall benefits of the transit alternative.

For the sake of argument, it was assumed that all new HOV users are converted solo drivers. For this case, the combined person-moving capacity of BRT and increased HOV use in the peak hour and peak direction are summarized in Table 2. Note again, that this capacity represents increased HOV use over use in the current and baseline condition.

Table 2. Combined Person-Moving Capacity Increase

Mode Combination	Peak Hour Passenger Capacity (passengers per hour)	Percentage of Metrorail Capacity
Metrorail	8,640	–
BRT + Option X Increase	7,984	92%
BRT + Option Y Increase	7,024	81%
BRT + Option Z Increase	8,560	99%

Overall, the above analysis shows that two alternatives proposed in Dulles Plan B would not be capable of providing the same capacity as Metrorail, even with generous assumptions regarding vehicle occupancy and the types of travelers switching to the HOV lanes.

Ability to Meet Demand

To determine whether the maximum person-moving capacity provided by the combination of BRT and increased HOV use would meet the demand projected for Metrorail, it is necessary to know the maximum passenger load forecast for the peak hour. All transportation systems must be designed to support the demand expected during the "peak of the peak," even though this may result in under-utilization of capacity for the rest of the peak period. As described in the *Highway Capacity Manual (HCM)*:

> "Volume and flow rate can be illustrated by the volumes observed for four consecutive 15-min periods. The four counts are 1,000, 1,200, 1,100, and 1,000. The total volume for the hour is the sum of these counts, or 4,300 veh. The flow rate, however, varies for each 15-min period. During the 15-min period of maximum flow, the flow rate is 1,200 veh/0.25 h, or 4,800 veh/h. Note that 4,800 vehicles do not pass the observation point during the study hour, but they do pass at that rate for 15 min.
>
> "Consideration of peak flow rates is important in capacity analysis. If the capacity of the segment of highway studied is 4,500 veh/h, capacity would be exceeded during the peak 15-min period of flow, when vehicles arrive at a rate of 4,800 veh/h, even though volume is less than capacity during the full hour. This is a serious problem because dissipating a breakdown of capacity can extend congestion for up to several hours." (HCM, 2000, Page 7-1)

Similar principles apply to passenger loads on transit systems. As noted in the *Transit Capacity and Quality of Service Manual (TCQSM)*:

> "The temporal and spatial distribution of transit passengers often prevents transit capacity from being fully utilized for the duration of the peak period. In the temporal sense, peaks within the peak period occur at major work start and finish times and can result in brief periods of operation at capacity followed by under capacity operation. Short-term fluctuations in ridership demand must be considered to avoid unacceptable passenger queuing or overcrowding." (TCQSM, 1999, Page 1-37)
>
> "Because the length of time that passengers remain on a bus affects the total number of passengers that may be carried over the entire length of a route, person capacity is often measured at a route's maximum load point. For example, an express bus may have most of its passengers board in a suburb and disembark in the CBD [central business district]. In this situation, the number of passengers carried at the maximum load point will be close to the total number of boarding passengers. For a local bus, with a variety of potential passenger trip generators along the length of the route, the number of persons carried over the length of the route will be significantly greater than the express bus, although both bus' passenger loads at their respective maximum load points may be quite similar." (TCQSM, Page 2-1)

The maximum load point is the point at which the transit line carries the maximum passenger volume experienced during the day. The best method for determining this peak demand point is to examine line load projections, rather than factoring down the daily demand estimates. The travel demand forecast model used for the Dulles Corridor Rapid Transit Project produces information on the passenger line loads for each alternative during the peak half-hour.

To determine the hourly capacity needed to serve this peak half-hour demand, it is necessary to determine the equivalent "passenger flow rate" for the hour (as in the HCM example above). This rate would be equal to 2 X (peak half-hour load). Note that the hourly demand indicated by this flow rate would likely be higher than the actual level of demand experienced in the peak hour; however, the transit system must be still have enough capacity to support this peak level of passenger flow.

For the Metrorail Alternative, demand for the full Dulles Corridor line includes all stations between the Route 772 and Stadium-Armory stations, because Dulles Corridor trains would continue onto the Orange Line, serving Orange Line stations between East Falls Church and Stadium-Armory. In the a.m. peak direction, the maximum load point for the line as a whole (for all Metrorail alignments) is between the Courthouse and Rosslyn stations in Arlington (see Page 6-45 in the Draft EIS). This is the point at which Dulles Corridor trains carry their largest load of passengers. For Alignment T6/T9 (the Metrorail alignment with the highest overall demand), the peak half-hour load at this maximum load point is 5,677 passengers. The hourly equivalent load would be 11,354 passengers. If the Dulles Corridor Line operates 9 trains per hour with 8 cars per train, the resulting average passenger load is 157 persons per car (ppc) in the peak hour. This load exceeds the WMATA passenger loading goal of 120 ppc per hour. In other words, at this passenger flow rate, not even the Metrorail Alternative provides enough capacity to meet demand at WMATA's loading standard during the peak.

Because operations under the BRT Alternative would be limited to the corridor, it is more logical to evaluate whether combined BRT and HOV operations would be able to accommodate the peak demand for Metrorail within the corridor. Alignment T6/T9 essentially has two maximum load points in the corridor in the a.m. peak direction. The first maximum load point is between the Tysons West and Tysons Central C stations. However, though many people exit the train at the Tysons Central C and Tysons Central stations, a number of people then board the train at Tysons East Station. Therefore, the second maximum load point for operations within the corridor is between the Tysons East and East Falls Church stations. The peak half-hour loads at these points are nearly identical (3,769 and 3,770, respectively). Therefore, the equivalent hourly passenger demand for Metrorail operations in the corridor is 7,540 passengers.

Based on information in the preceding section, both the combinations of (BRT + Option X Increase) and (BRT + Option Z Increase) would provide enough physical capacity to meet this demand, if all the assumptions regarding vehicle occupancy and the conversion of solo drivers are accurate.

However, capacity is not what truly limits the ability of BRT in the Dulles Corridor to serve the same level of demand as Metrorail. BRT would not have the same "drawing power" as Metrorail because of a combination of other factors:

- BRT forces travelers bound for Arlington and the Core to transfer at the Orange Line (or at Tysons West for BRT/Metrorail).

- BRT does not provide a direct connection to Tysons Corner. It requires travelers to transfer to another feeder system before reaching their final destination in Tysons Corner.

The combined effect of these factors is evidenced in both the overall ridership totals for BRT versus Metrorail (see Draft EIS Table 6.3-8), as well as in the projected line loads for the existing Orange Line under the BRT Alternative (see Draft EIS Table 6.3-10, which shows estimates of actual hourly loads, not equivalent hourly passenger flow for the peak half-hour). While the maximum loads on the Orange Line Vienna service for the Metrorail Alternative are less than those for the Baseline, the maximum loads on the Vienna service under the BRT Alternative actually increase over those for the Baseline. A major reason for this effect is that under the BRT Alternative, people traveling to Arlington and the core would continue to drive directly to Metrorail at Vienna, Dunn Loring, and West Falls Church rather than board the BRT closer to home and then transfer to rail.

If it is assumed that BRT is only capable of attracting a certain level of demand, the question becomes: "Will increased use of the HOV lane on the Dulles Toll Road provide enough person-moving capacity to meet the incremental difference between Metrorail demand and BRT demand?"

Analysis of the line load projections for BRT 1 show that, overall, the demand at the maximum load point (between the Wiehle Avenue and Spring Hill Road stations) is 2,243 passengers in the peak direction in the peak half-hour. The equivalent hourly passenger flow would be 4,486 passengers. If there is latent demand for BRT that is not being met because of capacity constraints, we can assume that increasing the vehicle size by 31 percent (from 61 seats to 80 seats) would result in parallel increases in peak demand. (Equilibration work done as part of the travel demand forecasting process for the project suggests that this is not the case, but it was assumed to be true for the sake of argument.) In this case, it can be assumed that BRT with larger vehicles will attract an equivalent hourly passenger demand of approximately 5,876 passengers (1.31 X 4,486 passengers). The difference between the peak-hour Metrorail demand and the peak-hour BRT demand is then 1,664 passengers (7,540 passengers – 5,876 passengers).

Information presented in Table 1 in the previous section shows that HOV Option Z is capable of providing a large enough increase in person-moving capacity to meet this incremental demand. However, the assumptions about vehicle occupancy for Option Z are extremely generous. Table 3 shows a range of occupancy options and the required mix of 3-person, 2-person, and 1-person vehicles to attain these occupancies. Also summarized is the resulting person-moving capacity increase for each occupancy rate.

Table 3. Potential HOV Lane Occupancy under HOV Option Z

Occupancy Option	Percentage of Cars with Given Number of Passengers			Average Occupancy (persons per vehicle)	Peak-Hour Person Capacity for HOV Option Z	
	3	2	1		Total	Increase[1]
1	60 %	30 %	10 %	2.5	4,800	2,160
2	50 %	40 %	10 %	2.4	4,608	1,968
3	40 %	40 %	20 %	2.2	4,224	1,584
4	25 %	30 %	45 %	1.8	3,456	816
5	25 %	25 %	50 %	1.75	3,360	720
6	20 %	20 %	60 %	1.6	3,072	432
7	5 %	30 %	55 %	1.3	2,496	(144)

1: Base level of HOV use was 1,200 cars with 2.2 persons per vehicle, or 2,640 persons.

Option 1 shows the breakdown that would be required to get the 2.5 person per vehicle occupancy assumed for HOV Option Z. In the Dulles Corridor, it is highly unlikely that 60 percent of the HOV lane users would be in 3-person vehicles if 2-person and 1-person vehicles were allowed to use the lane for a fee. It is much more likely that 50 to 60 percent of the vehicles would have a single occupant. As shown for Options 5 through 7, under more realistic occupancy conditions for HOV Option Z, vehicle occupancy would more likely be on the order of 1.6 persons per vehicle. At this level of occupancy, HOV Option Z would provide a much lower increase in person-moving capacity than needed to satisfy the 1,664-person incremental demand.

Moreover, as stated previously, it is very unlikely that incentives to increase HOV use would only appeal to people who previously used the general traffic lanes. It is much more likely that some of the new HOV users would be persons that would have otherwise used the BRT system, reducing the demand for BRT.

Overall, though increased use of the HOV lanes would be beneficial for the Dulles Corridor, the combination of BRT and increased use of the HOV lanes do not provide enough capacity to support the projected demand for Metrorail.

Comment: BRT can serve the airport better than rail because rail does not typically serve both arrivals and departures conveniently. It generally requires long walks between the rail station and the check-in and baggage claim areas.

Response: As currently proposed, neither BRT nor Metrorail provides direct access to the arrival and departure levels at Dulles Airport. Both connect to the terminal face along the existing Commercial Roadway. The BRT stop is immediately adjacent to the face of the terminal, while the center of the Metrorail platform is approximately 193' from the face of the terminal (to preserve MWAA's ability to construct its automated people mover system).

Because the proposed BRT system includes off-board fare collection, stopping at more than one location along the arrival and departure roads would require constructing additional fare arrays. This change would add expense to the project and could hamper circulation in the airport terminal. These changes also could hamper BRT passenger circulation and impact the architectural integrity of the historic building. Such changes would need to be coordinated with MWAA and the State Historic Preservation Officer. The current location and configuration of the BRT stop at the airport has been carefully coordinated with the Metropolitan Washington Airport Authority (MWAA).

Comment: BRT can serve the airport better than rail because:

1) **Very few schedules operate with service more frequently than 15 minutes in the peak period and 30 minutes in the off-peak period.**

2) **Trains are not user-friendly for luggage because they often require travelers to mount steep stairs to enter the train, and some have additional stairs once you are inside the train.**

3) **Rail fares to airports are generally higher than bus fares to airports.**

Response: Most of the disadvantages of rail at airports stated in Dulles Plan B are not applicable to the Metrorail Alternative for the Dulles Corridor Rapid Transit Project:

- Peak headways on Dulles Metrorail are 7 minutes, off-peak headways are 12 minutes (see Draft EIS Table 6.3-5).
- Trains for the Dulles Corridor do not include stairs. Boarding would take place from platforms that are at the same level as the train floor.
- Fares for the Dulles Corridor project (both BRT and Metrorail options) are assumed to be identical to the existing Metrorail fare structure (adjusted for inflation over time). Current maximum fares on Metrorail are $3.25 for a one-way trip.

Comment: Different methods should be used to finance the project.

1) **The excess toll funds (existing surplus from toll revenue) should be used for BRT construction and operation.**

2) **Peak-hour or high-occupancy tolling should be applied and used to pay for BRT operations after tolls expire. [also known as value pricing]**

3) **A Tysons Corner tax district should be used to pay for any rail expansion through Tysons. This tax would only apply to Tysons residents/businesses).**

Response: If BRT is selected as the locally preferred alternative, use of the surplus toll revenue will be explored as part of additional work on the financial plan for the Final EIS.

As described above, much more detailed study would be required before implementing value pricing schemes. These studies and any subsequent application of peak-period pricing would be within VDOT's purview (as the operator/owner of the Toll Road).

Matters relating to taxes or special tax districts are determined at the local level by property owners and the Fairfax County. Such a financing decision is not within the Commonwealth of Virginia's or WMATA's control.

Alternatives Evaluation Technical Memorandum

Tysons Corner Alignments: Alignment T12

The purpose of this technical memorandum is to document the results of the alternatives evaluation for an alignment that was identified during the public comment period following publication of the Draft EIS for the Dulles Corridor Rapid Transit Project. This analysis is consistent with the *Evaluation Methodology* (November 2000) developed for the project, and is based on the same social, environmental, economic, and transportation factors used for the evaluation documented in the *Final Alternatives Analysis Report* (May 2001). This memorandum includes a description of the alignment, an evaluation of the alignment, and conclusions or recommendations regarding further analysis.

1.0 DESCRIPTION OF ALTERNATIVE

Alignment T12 is located within the Tysons Corner section of the proposed Dulles Corridor Rapid Transit Project. It is a variation of the Tysons Corner alignments evaluated in the Draft EIS.

As shown in Figure 1, Alignment T12 is a split-service alignment, with one branch extending along the Dulles International Airport Access Highway (DIAAH) on the north side of Tysons Corner, and a second branch penetrating the core of Tysons Corner. The branches diverge at the eastern edge of Tysons Corner, in the vicinity of the Dulles Connector Road/Route 123 interchange, and converge again at the western edge of Tysons Corner, in the vicinity of the Dulles Toll Road/Route 7 interchange. The north branch of Alignment T12 (or the "express" leg) would be constructed first, allowing service to the remainder of the corridor to begin while construction of the south branch (or "local" leg) is completed.

The express leg of the alignment would primarily be constructed at-grade along the median of the Dulles Connector Road and the DIAAH. It would include one station in the median of the DIAAH near the Spring Hill Road interchange. This station would be in the same location as the median station proposed for the BRT 1 alignment option evaluated in the Draft EIS. It would include a pedestrian bridge connection to the existing Tysons-West*Park Transit Station in Tysons Corner. There would not be a bridge connection to the north side of the DIAAH.

The local leg of Alignment T12 (i.e., the leg through Tysons Corner) would follow one of the four Metrorail alignments evaluated in the Draft EIS. Although Alignment T6 is depicted in Figure 1, any of the proposed Tysons Corner alignments (T1, T6, T9, or T4) could be combined with the express leg.

It is assumed that once construction of both legs is complete, the Spring Hill Road Station would remain, even though three to six stations would provide direct access to the core of Tysons Corner.

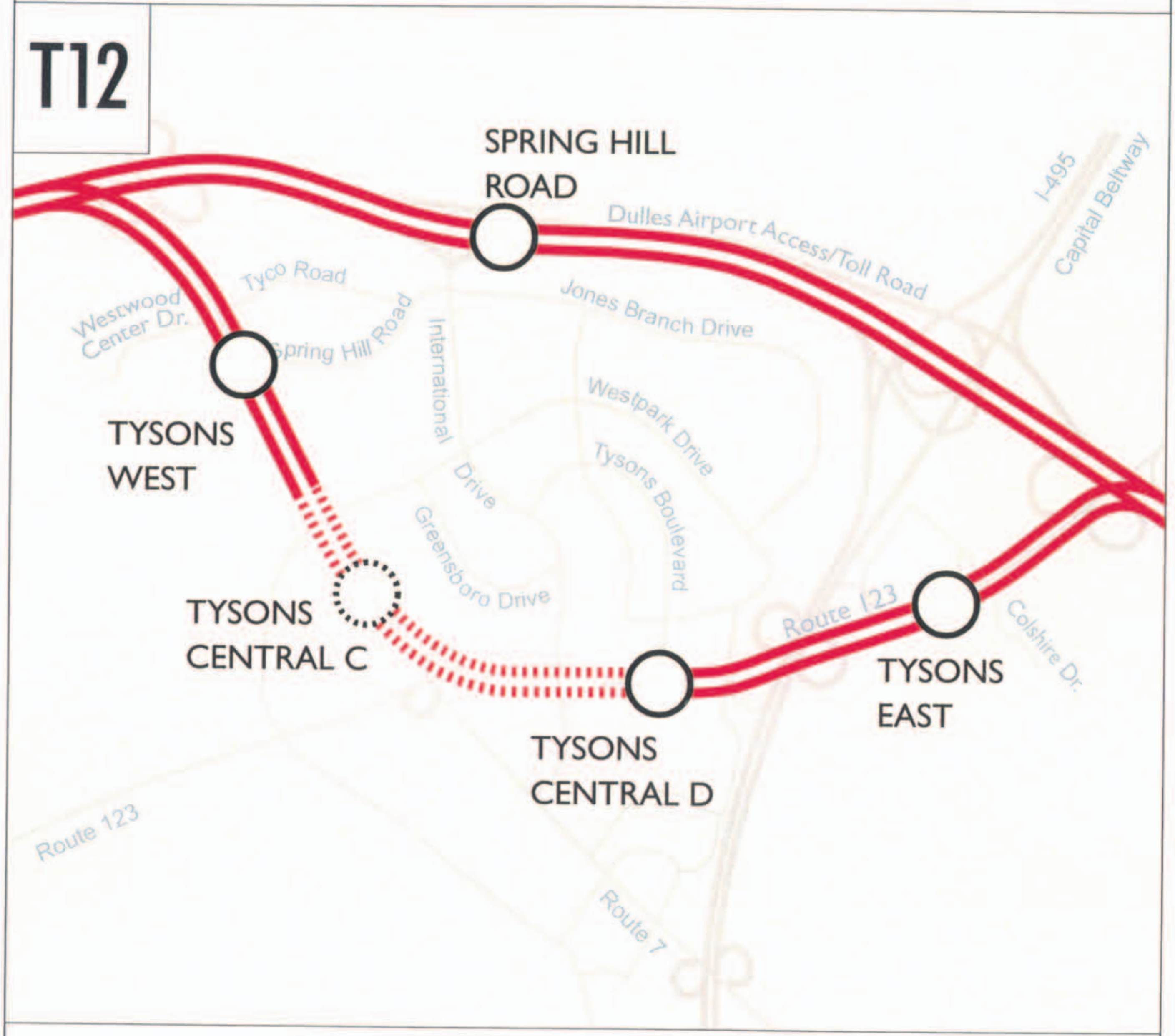


Figure 1

Tysons Corner Metrorail Alignment T12

Dulles Corridor
Rapid Transit Project

2.0 BACKGROUND

Alignment T12 was identified by the public as a new alternative during the comment period that followed publication of the Draft EIS.

3.0 SCREENING EVALUATION

As shown in the evaluation below, Alignment T12 does not perform well relative to several evaluation criteria. The alignment would have greater costs and impacts than the alternatives previously considered, would not effectively serve corridor activity centers, and would likely result in ridership reductions. In addition, the service associated with the alignment would be difficult to integrate with operations along the rest of the Metrorail system.

Alignment T12 has several design challenges that would result in substantial capital cost increases and environmental impacts.

The design of Alignment T12 presents several engineering challenges. The first of these challenges is the need to coordinate with the Virginia Department of Transportation's (VDOT's) expansion plans at the interchange of the Capital Beltway (I-495) and the Dulles Toll Road/Connector Road. Past coordination on the proposed Capital Beltway improvements, particularly during the Major Investment Study, indicates that plans for this interchange would consume the existing median in full. Moreover, the proposed third lane for the DIAAH may extend as far as the Capital Beltway. Therefore, the construction of the new express leg through this area would require shifting the DIAAH, the Dulles Toll Road, and the adjacent ramps outward. Because the majority of the new express leg will be located at-grade, substantial impacts due to the shifting of these roadways would likely result. The full extent of the impacts would not be known until full coordination with the proposed Beltway interchange is performed; however, impacts could relate to maintenance of traffic, removal of vegetation, private property acquisition, and noise.

Additional engineering challenges for Alignment T12 are related to the two points where the express and local tracks diverge and converge. These turnout/tie-in points would be located near the Dulles Connector Road/Route 123 interchange and at the Route 7/DIAAH interchange. Because these locations are at points where the existing Tysons Corner alignments are curved as they merge and diverge from the Connector Road and the DIAAH, respectively, and because turnouts should be designed on a horizontally and vertically tangent sections of track, the effort and expense to engineer and construct the merge points for the express tracks and the local tracks would be substantial.

At both the Route 123 and Route 7 interchanges, the current T alignments (T1, T6, T9, and T4) would need to be re-designed in order to accommodate a tangent tie-in with the express tracks. Developing the new design would require a substantial effort. In addition, at the Route 123 interchange, the existing bridges over Chain Bridge Road and the roadways in this area would need to be shifted outward to accommodate the four merging tracks (two express tracks, two Tysons local tracks). At Route 7, the point at which the tracks would likely tie-in is an aerial section of the line. This aerial tie-in would be more costly to design and construct, than the previously assessed Tysons Corner alignments. It would also be more likely to have noise impacts than other alignments, because the aerial segment for Alignment T12 would include special trackwork. The increased noise could affect Ash Grove, a historic site.

Alignment T12 would also require shifting the DIAAH outward to accommodate the proposed Spring Hill Road Station. current median width (64 feet) is too narrow to accommodate the standard WMATA platform, the required safety barriers, and an additional 10 feet for an inside shoulder along the existing DIAAH travel lanes. (The Spring Hill Road Station proposed for the BRT 1 alignment option would have a narrower platform, and therefore, would not require shifting the roadways.) The shifting of the roadway would also include the costly reconstruction of Spring Hill Road overpass bridges and an existing slip ramp between the DIAAH and the Dulles Road.

Overall, the need to construct new bridges and shift existing roadways, bridges, and ramps to accommodate the express leg of Alignment T12 would add approximately $260 million in year-of-expenditure dollars to the cost of the Metrorail Alternative. This cost also includes the additional station at Spring Hill Road.

Providing rail to the remainder of the corridor before rail through the core of Tysons Corner would not serve a substantial portion of the travelers that would otherwise be attracted to the system.

A significant portion of the demand for the Dulles Corridor Rapid Transit Project is for travel to and from Tysons Corner. The *Travel Demand Forecasting Methodology and Results Report* (June 2002) shows that for Alignment T6 of the Metrorail Alternative, trips related to Tysons Corner make up 47 percent of all corridor-related rail trips in 2025 and 51 percent of all corridor-related rail trips in 2010 (opening year for the Metrorail Alternative). The report also shows that 43 percent of daily boardings for Alignment T6 in 2025 are in Tysons Corner; in 2010, 46 percent of daily boardings are at Tysons Corner stations.

Though the largest projected movement on the Dulles Corridor line during the peak period is between households in the corridor and employment in Arlington and the region's core, the above model results confirm that a sizeable portion of the overall transit demand in the corridor is for trips to and from Tysons Corner.

The proposed construction phasing for Alignment T12 would not effectively serve a large portion of the travelers that would otherwise be attracted to the system. Until the local leg is complete, travelers wishing to connect to Tysons Corner would have to exit the train at the Spring Hill Road Station and transfer to a feeder service to reach their final destinations in Tysons Corner. This transfer would make rail service substantially less attractive than that provided by alignments that penetrate the core of Tysons Corner.

The completed Alignment T12 would not serve the Tysons Corner area as effectively as previously analyzed alternatives.

As described above, a substantial portion of the transit demand in the Dulles Corridor is for travel to and from Tysons Corner. This area attracts a large percentage of trips remaining in the corridor and trips originating outside the corridor, and also produces a substantial percentage of the trips traveling outside the corridor. Overall, it is expected that for the Metrorail Alternative analyzed in the Draft EIS, approximately 50 percent of daily, corridor-related rail trips in 2025 will begin or end at Tysons Corner stations. Therefore, an alignment that effectively serves the employment concentrations and major activity centers within Tysons Corner will contribute significantly to the success of the Dulles Corridor Rapid Transit Project.

However, the split service proposed for Alignment T12 (express service along the DIAAH and local service through the core of Tysons Corner) would degrade the level of service to Tysons Corner, reducing the attractiveness of the line for many travelers. Under the Metrorail Alternative in the Draft EIS, all corridor stations would be served by trains operating at 6-minute headways in the peak period. For Alignment T12, it would be necessary to operate trains on each branch of the split service at 12-minute headways in order to maintain a combined 6-minute headway for service to and from the core. (Operational constraints in the core of the Metrorail system would not allow Dulles Corridor trains to operate more frequently than every 6 minutes.) The 12-minute headways to and from Tysons Corner would reduce the convenience of the transit service and would double average wait times from 3 minutes to 6 minutes.

Alignment T12 would offer little to no travel time savings to travelers, and could reduce ridership overall.

Rail travel time data for the Dulles Corridor Rapid Transit Project is presented in the *Transit Operations and Maintenance Plan* (June 2002) on Pages 106 and 107. For Alignments T6 and T9, travel times from select locations in the corridor to the East Falls Church Station on the existing Orange Line are shown below in Table 1. These locations are representative times for travel from the Mid-Corridor, the airport, and Loudoun County.

Table 1: Travel Times to East Falls Church from Select Corridor Locations – Alignment T6/T9

From	**To**	**Travel Time (minutes : seconds)**
Wiehle Avenue	East Falls Church	20:42
Dulles Airport	East Falls Church	32:21
Route 606	East Falls Church	37:05

As described earlier, it is projected that the largest movement in the corridor is between households in the corridor and employment in Arlington and the region's core. Representative destination stations for these trips are the Rosslyn station in Arlington and the Metro Center station downtown Washington, D.C. According to the WMATA website, travel times from East Falls Church to these stations are as follows:

Table 2: Travel Times from East Falls Church to Arlington and the Core – Existing Orange Line

From	**To**	**Travel Time (minutes)**
East Falls Church	Rosslyn	12
East Falls Church	Metro Center	19

Therefore, for Alignment T6/T9, rail travel times from the corridor to these destinations would be:

Table 3: Travel Times from Select Corridor Locations to Arlington and the Core – Alignment T6/T9

From	**To**	**Travel Time (minutes : seconds)**
Wiehle Avenue	Rosslyn	32:42

Dulles Airport	Rosslyn	44:21
Route 606	Rosslyn	49:05
Wiehle Avenue	Metro Center	39:42
Dulles Airport	Metro Center	51:12
Route 606	Metro Center	56:05

As noted in Section 1.0, it is assumed that once Alignment T12 is complete, the Spring Hill Road Station would remain in service; therefore, the alignment would provide one-stop express service between the Mid-Corridor and the Orange Line.

A quick method for calculating the likely travel time for this proposed express leg is to determine the distance between the Wiehle Avenue, Spring Hill Road, and East Falls Church stations as well as the average running speed of the train. The approximate distance between the Wiehle Avenue and Spring Hill Road stations is 6.3 miles, and the distance from Spring Hill Road to East Falls Church is approximately 5.9 miles. The total distance between the Wiehle Avenue and East Falls Church stations for an alignment along the median of the DIAAH and the Connector Road is, therefore, 12.1 miles (versus 12.7 miles for Alignment T6/T9 through the core of Tysons Corner).

Average running speed can be estimated by examining the travel time data presenting on Page 107 of the *Transit Operations and Maintenance Plan*. For the longest uninterrupted segment (5.84 miles between Tysons West and Wiehle Avenue) the average running speed is approximately 45 miles per hour (mph). Given this information, it is reasonable to assume that the average running speed for the 6.3- and 5.9-mile segments would be approximately the same. Therefore, the approximate travel time for the one-stop express service would be 16.3 minutes—a savings of 4.4 minutes over the Alignment T6/T9 service (20.7 minutes between Wiehle Avenue and East Falls Church). Travel times for trips to Arlington and the core would then be as shown in Table 4.

Table 4: Travel Times from Select Corridor Locations to Arlington and the Core – Alignment T12

		Travel Time (minutes)	
From	**To**	**Local**	**Express**
Wiehle Avenue	Rosslyn	33	27
Dulles Airport	Rosslyn	44	39
Route 606	Rosslyn	49	44
Wiehle Avenue	Metro Center	40	34
Dulles Airport	Metro Center	51	46
Route 606	Metro Center	56	51

Given the length of the overall trips, for many of these travelers the time savings offered by the express leg would be negligible. For while the perceived difference between a 5-minute trip and a 10-minute trip would be substantial, the perceived difference between a 25-minute trip and a 30-minute trip is relatively minor.

If it was assumed that trains on the express leg operated non-stop between Wiehle Avenue and East Falls Church, completely bypassing Tysons Corner, the time savings provided by Alignment T12 would still be minimal. As before, the average speed for the 12.1-mile segment can be determined by examining the average speeds for the station-to-station segments of Alignment T6/T9. Given that the 5.84-mile segment for Alignment T6/T9 has an average speed of 45 mph, it is reasonable to assume the longer non-stop segment for Alignment T12 would have an average speed of approximately 50 mph (keeping in mind that WMATA's maximum operating speed is 59.5 mph and accounting for acceleration and deceleration). Accordingly, the travel time between Wiehle Avenue and East Falls Church would be 14.5 minutes. Therefore, the overall travel time savings for the non-stop express service would be 6.2 minutes. As before, this time savings would be negligible, given the length of the trip. Table 5, below, summarizes the travel times projected for the two express service variations and the local service through the core of Tysons Corner.

Table 5: Travel Times from Select Corridor Locations to Arlington and the Core – Alignment T12 with One-Stop and Non-Stop Variations

From	To	Travel Time (minutes)		
		Local	One-Stop Express	Non-Stop Express
Wiehle Avenue	Rosslyn	33	27	25
Dulles Airport	Rosslyn	44	39	37
Route 606	Rosslyn	49	44	42
Wiehle Avenue	Metro Center	40	34	32
Dulles Airport	Metro Center	51	46	44
Route 606	Metro Center	56	51	49

The time savings offered by either the express leg (non-stop or one-stop service) could be negated by the increased wait time associated with the split service. Because the express service would operate with 12-minute headways at best, travelers that wish to bypass Tysons Corner would have to wait for the express train approximately 6 minutes, on average. For operations under Alignment T6/T9, travelers wait an average of 3 minutes. Therefore, the time savings offered by non-stop the express service is in effect only 3.2 minutes, while the one-stop express time savings is 1.4 minutes.

In addition, the increase in wait time for both the express service and the service to Tysons Corner would have far greater impacts on ridership in the Dulles Corridor than the potential 4 to 6 minutes saved on trips between the corridor and the core. Because transit riders are typically very sensitive to out-of-vehicle travel time (walk time, wait time, and transfer time), and generally perceive this time to be lengthier than in-vehicle time, most travel demand models weigh out-of-vehicle travel time two to three times more heavily than in-vehicle travel time when determining the attractiveness of a particular travel alternative. For the Dulles Corridor Rapid Transit Project, the models weigh out-of-vehicle travel time 3.5 to 4.0 times more heavily than in-vehicle travel time. Therefore, it is very likely that the increase in wait time for Alignment T12 would reduce ridership more than the time savings on the express leg would increase ridership.

The different travel times between the express and Tysons local trains would have other operational complications.

Because trains running on the express leg of Alignment T12 would have a shorter run time than trains running through the heart of Tysons, there will be significant operational complications.

Specifically, trains coming from the Dulles Corridor and merging into the Orange Line between the West Falls Church and East Falls Church stations must be spaced exactly 6 minutes apart in order to be integrated with Orange Line trains coming from Vienna, as well as with Blue Line trains at Rosslyn. Maintaining 6-minute headways also ensures that capacity is used more efficiently. If passengers are distributed unevenly, one train will be very full and the next train will not be used to capacity. This uneven distribution would be especially problematic given the crowding on existing Orange Line services. Table 6 outlines the impacts of the different run times for the express and local services through Tysons Corner.

Table 6: Effects of Travel Time for 6-Minute Combined Headways West of Tysons Corner

	Time Depart Wiehle Avenue	Time Arrive East Falls Church
Local Train Leaves First		
Local[1]	0:00	20:42
Express[2]	6:00	22:18
Local	12:00	32:42
Express	18:00	34:18
Express Train Leaves First		
Express	0:00	16:18
Local	6:00	26:42
Express	12:00	28:18
Local	18:00	38:42
Express	24:00	40:18

1: Local service run time is 20.7 minutes between Wiehle Avenue and East Falls Church (assumes Alignment T6).

2: One-stop express service run time is 16.3 minutes between Wiehle Avenue and East Falls Church.

As the table shows, if service frequencies are 6 minutes through the western and central portions of the Dulles Corridor, trains would arrive at East Falls Church approximately 1.6 minutes apart, making integration into the Orange Line service from Vienna very complex. For the above operating patterns, the only feasible way integrate Dulles Corridor and Orange Line services would be to hold Dulles Corridor trains at the intersection of the Dulles and Orange Lines until they can merge with the Orange Line at the appropriate intervals, thus negating much of the run time advantages associated with the express service.

If trains were scheduled so that they were staggered to arrive at the Orange Line every 6 minutes, the train spacing through the central and western portions of the corridor would be as shown in Table 7.

Table 7. Effects of Travel Time for 6-Minute Combined Headways East of Tysons Corner

	Time Depart Wiehle Avenue	Time Arrive East Falls Church
Express	1:48	18:00
Local	3:18	24:00
Express	13:48	30:00
Local	15:18	36:00

Express	25:48	42:00
Local	27:18	48:00

For this operating pattern, an express train would serve the Wiehle Avenue Station (and other stations along the western end of line), followed by a local train 1.6 minutes later. The next train would not arrive at the station until 10.4 minutes later. Though the headways for both the local and express services would be the same as those for the operating patterns shown in Table 6, the arrival pattern for the trains in the Mid-Corridor and Loudoun County would result in a combined headway of 10 minutes, rather than the 6 minutes that would result from the operating patterns shown in Table 6. This reduced service frequency would likely decrease overall ridership totals.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The above evaluation indicates that, relative to the alternatives previously considered in the Draft EIS, Alignment T12 would have numerous deficiencies.

- The additional tracks for Alignment T12, as well as the two rail "interchanges" and the additional station at Spring Hill Road, would increase costs above those for Alignments T1, T6, T9, and T4. Moreover, the investment in a station at Spring Hill Road would be forgone once the Tysons Corner "local" leg of the alignment was complete.
- The shifting of the roadways that would be required to ensure the express leg is compatible with interchange plans at I-495 and the Dulles Connector Road would have substantial impacts.
- Given that the overall demand for service between select locations in the central and western portions of the corridor and the core is not significantly greater than the demand for service to and from Tysons Corner, there is little benefit to extending service to the remainder of the corridor before providing service through the core of Tysons Corner.
- An express service from the western end of the corridor to the region's core would offer little time savings benefits, and would degrade the frequency of service to Tysons Corner. When combined with the potential increase in wait time that the split service would cause, Alignment T12 would likely reduce overall ridership on the Dulles Corridor line.
- Split service operations could result in train "bunching" where the Dulles Corridor line meets the Orange Line, or could decrease service frequency through the western end of the corridor.

Given that it would have greater costs and fewer benefits than alternatives previously considered in the Draft EIS, Alignment T12 is not recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process.

Alternatives Evaluation Technical Memorandum

Tysons Corner Alignments: Alignment T13

The purpose of this technical memorandum is to document the results of the alternatives evaluation for an alignment that was identified during the public comment period following publication of the Draft EIS for the Dulles Corridor Rapid Transit Project. This analysis is consistent with the *Evaluation Methodology* (November 2000) developed for the project, and is based on the same social, environmental, economic, and transportation factors used for the evaluation documented in the *Final Alternatives Analysis Report* (May 2001). This memorandum includes a description of the alignment, an evaluation of the alignment, and conclusions or recommendations regarding further analysis.

1.0 DESCRIPTION OF ALTERNATIVE

Alignment T13 is located within the Tysons Corner section of the proposed Dulles Corridor Rapid Transit Project. It is a variation of the Tysons Corner alignments evaluated in the Draft EIS.

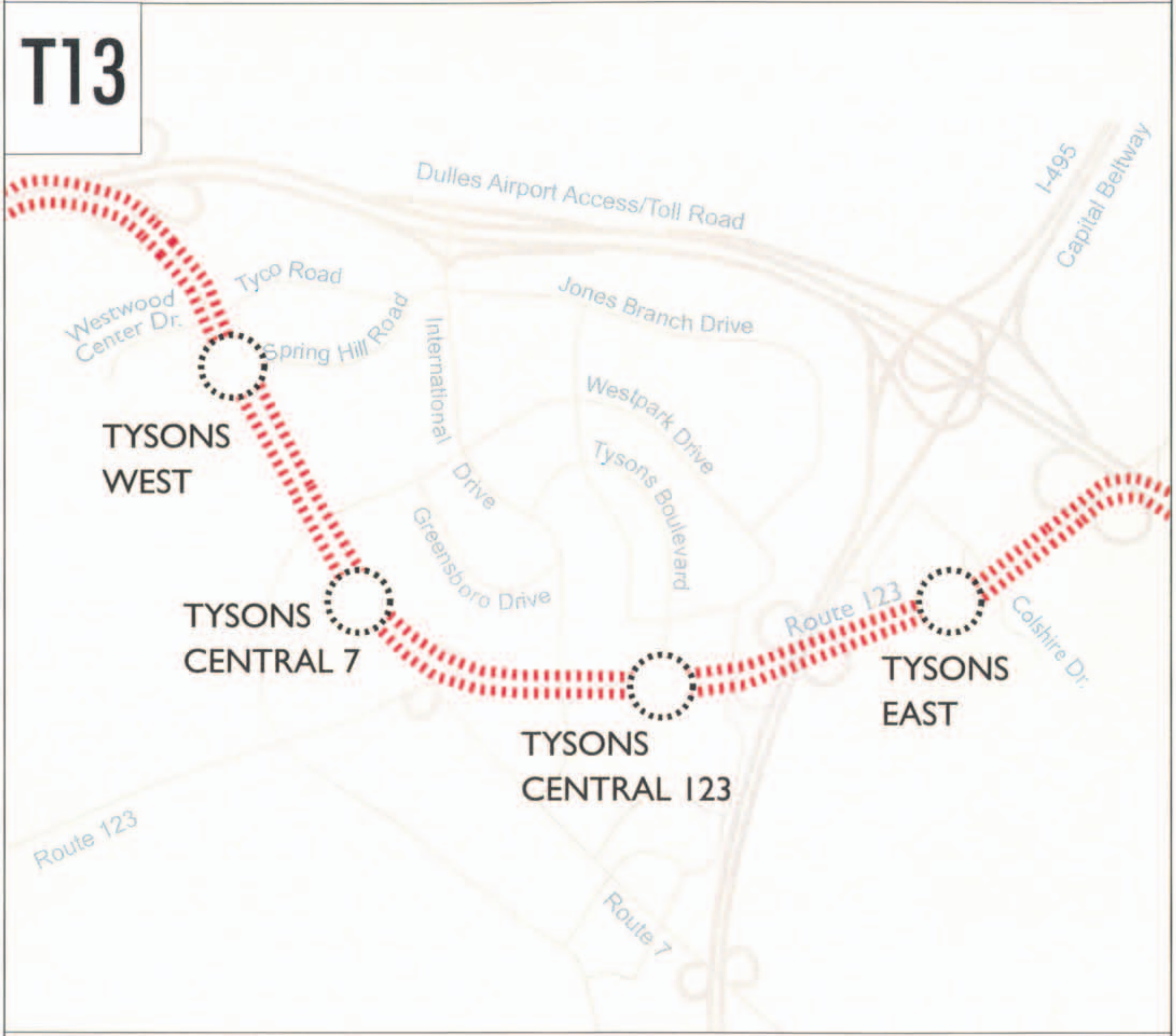
As shown in Figure 1, Alignment T13 is an entirely underground variation of Alignment T6, one of the Metrorail alignments evaluated in the Draft EIS. Alignment T13 transitions to a tunnel in the median of the Dulles Connector Road, west of Magarity Road. The alignment then continues underground through Tysons Corner, resurfacing west of Tysons Corner in the median of the Dulles Airport Access Road near the Route 7/Dulles Toll Road interchange. Alignment T13 includes four underground stations at the same locations as the four stations proposed for Alignment T6.

2.0 BACKGROUND

Alignment T13 was identified by the public as a new alternative during the comment period that followed publication of the Draft EIS.

3.0 SCREENING EVALUATION

As shown in the evaluation below, Alignment T13 does not perform well relative to several evaluation criteria. The alignment would have greater costs and risks than the alternatives previously considered, but would not have greater ridership benefits. Although Alignment T13 would reduce some of the environmental impacts associated with the alternatives evaluated in the Draft EIS, these effects could be mitigated at much lower cost.



LEGEND

○	Proposed Station
◌	Proposed Station Below Ground
▬	Proposed Aerial Alignment
▮▮▮▮▮	Proposed Underground Alignment
	Major Arterials

Figure 1

Tysons Corner Metrorail Alignment T13

Dulles Corridor
Rapid Transit Project

Alignment T13 would have higher costs than the alignments documented in the Draft EIS.

Draft cost estimates prepared by the Project Team indicate that an alignment that is completely underground through Tysons Corner would cost $3.5 billion (without financing). This total is approximately $421.7 million higher than that for Alignment T6, the longest underground alternative under study in the Draft EIS. It is assumed that, due to the length of the underground section, Alignment T13 would be constructed using a tunnel boring machine in combination with cut-and-cover construction for the stations.

Underground construction presents greater risks to project cost and schedule.

Alignment T13 would have greater potential for cost escalation than the alignments evaluated in the Draft EIS because underground construction poses risks that cannot be completely identified prior to actual construction. While it is customary to assess higher cost and schedule contingencies to underground construction to cover these potential exposures, it is not reasonable to assign a sufficient contingency to cover every risk, and maintain a level comparison among alternatives. Most of the significant risks relate to unknown subsurface conditions. Some of these conditions include are outlined below.

Soil conditions. Design of underground facilities typically includes a soil exploration and testing program to determine the type of subsurface material through which the underground facility is to be constructed. However, no matter how extensive the subsurface exploration program, past industry experience has shown that changed soil conditions are frequently encountered. These may require additional costs to design and construct the underground facility to account for the changed conditions, and nearly always cause significant delays.

Utilities. Underground construction requires that utilities be relocated or supported in place during construction. Like soil conditions, design of underground facilities includes an effort to identify and design for all known utilities. However, in an urbanized area like Tysons Corner, unidentified utilities are frequently encountered. Major utilities may require a redesign of certain transit features, or may require additional cost and effort to relocate the utility. In the worst cases, unknown utilities may be encountered and damaged during actual construction, leading to disruption of service to area businesses and residences.

Other Conditions. Other changed conditions can include archaeological finds, changed subsurface water conditions, and unrecorded hazardous materials.

In all of the cases cited, the project risks can be greater than the cost to accommodate the change. Schedules can be severely impacted, leading to increased escalation costs, increased inconvenience to the public, and even delays in opening the project.

Alignment T13 would not offer additional ridership benefits.

Because Alignment T13 would have the same number of stations as Alignments T6 and T9, in approximately the same locations, Alignment 13 would be expected to have the same ridership as these alignment options.

Although the underground configuration has environmental benefits, these benefits can be provided through lower cost mechanisms.

The primary reason for locating an alignment underground is to avoid impacts related to visual quality, noise and vibration, and conflicts with existing infrastructure.

As noted in Section 3.4 of the Draft EIS, because the elevated portions of Alignments T1, T6, and T9 primarily extend along relatively wide roadways, the visual impact for these alignments would generally not be as substantial. The most substantial visual effects for these alternatives would occur in the vicinity of the Tysons Central 123 Station, where landscaping would be removed and signage for the Tysons Galleria would be obscured. These effects can be mitigated at a relatively low cost by working with designers to replace landscaping and adjust signage.

As described in Section 4.7 of the Draft EIS, the most substantial noise effects for the Metrorail Alternative would occur along the Dulles Connector Road, east of Tysons Corner. Within Tysons Corner, the largest concentration of noise effects would be west of the Tysons West Station, where the alignments transition from Route 7 to the DIAAH. Alignment T13 would eliminate the impacts at the western edge of Tysons Corner; however, the potential mitigation measures proposed in Section 4.7.7 of the Draft EIS could be developed and implemented at a much lower cost than $400 million. Moreover, the additional cost for Alignment T13 would not address the majority of noise impacts associated with the Metrorail Alternative.

Alignment T13 would avoid some of the property acquisition required for Alignments T1, T6, and T9, but would have the same displacement effects as Alignment T6 because land would be required for station entrances, station facilities, and ventilation. As described in Section 3.3 of the Draft EIS, Alignment T6 would displace three businesses, one near the Tysons Central 7 Station and two at the Tysons West Station. Relocation opportunities for the displaced businesses exist within Fairfax County, and no special hardship is anticipated.

During construction, Alignment T13 may be less disruptive to traffic operations than the alignments evaluated in the Draft EIS because it is assumed that most of the alignment would use a tunnel boring method rather than cut-and-cover construction. However, maintenance of traffic plans for Alignments T1, T6, and T9 would minimize the effects of cut-and-cover construction to the extent possible and at a much lower cost than $400 million.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The above evaluation indicates that though Alignment T13 would mitigate the visual and noise effects associated with Alignments T1, T6, and T9, these effects could be mitigated through much lower cost mechanisms. Moreover, the alignment would have additional risks associated with underground construction.

Given that it would have greater costs than alternatives previously considered in the Draft EIS, with no additional transportation service benefits, Alignment T13 is not recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process.

Alternatives Evaluation Technical Memorandum

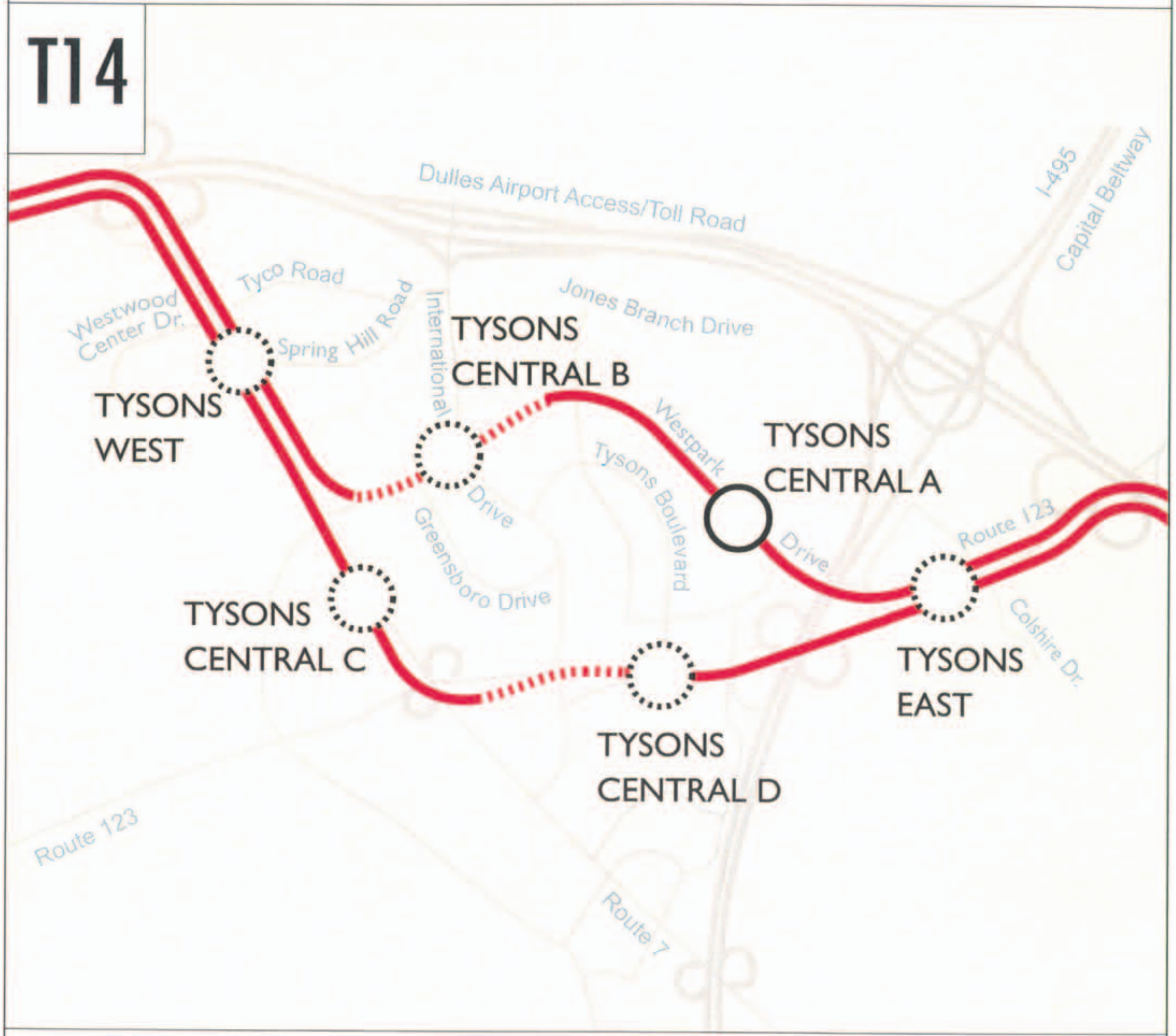
Tysons Corner Alignments: Alignment T14

The purpose of this technical memorandum is to document the results of the alternatives evaluation for an alignment that was identified during the public comment period following publication of the Draft EIS for the Dulles Corridor Rapid Transit Project. This analysis is consistent with the *Evaluation Methodology* (November 2000) developed for the project, and is based on the same social, environmental, economic, and transportation factors used for the evaluation documented in the *Final Alternatives Analysis Report* (May 2001). This memorandum includes a description of the alignment, an evaluation of the alignment, and conclusions or recommendations regarding further analysis.

1.0 DESCRIPTION OF ALTERNATIVE

Alignment T14 is located within the Tysons Corner section of the proposed Dulles Corridor Rapid Transit Project. It is a variation of the Tysons Corner alignments evaluated in the Draft EIS.

As shown in Figure 1, Alignment T14 is a variation of Alignment T4, one of the Metrorail alignments evaluated in the Draft EIS. Unlike Alignment T4, which is an entirely aerial loop through Tysons Corner, Alignment T14 includes two short underground segments, one along each leg of the loop. The northern leg of Alignment T14 transitions to a tunnel along Westpark Drive, between Park Run Drive and International Drive, and then continues underground to a point between Greensboro Drive and Route 7. The southern leg of the alignment includes a tunnel extending from the Tysons Central 123 station to just east of the Route 123/Route 7 interchange. The alignment includes six stations at the same locations as those proposed for Alignment T4; however, for Alignment T14, Tysons Central B station is an underground station.



LEGEND

○ Proposed Station

◌ Proposed Station Below Ground

▬ Proposed Aerial Alignment

▮▮▮ Proposed Underground Alignment

Major Arterials

Figure 1

Tysons Corner Metrorail Alignment T14

Dulles Corridor Rapid Transit Project

2.0 BACKGROUND

Alignment T14 was identified by the public as a new alternative during the comment period that followed publication of the Draft EIS.

3.0 SCREENING EVALUATION

As shown in the evaluation below, Alignment T14 would reduce the visual impacts of alternatives previously considered in the Draft EIS, but would have greater costs, increased risks, no additional ridership benefits, and the same operational complexities.

Alignment T14 would have environmental benefits.

Alignment T14 would reduce many of the visual impacts associated with Alignment T4. As discussed in Section 3.4 of the Draft EIS, Alignment T4 is expected to have much more substantial visual impacts than the other Metrorail alignments, due to the leg running along Westpark Drive—a relatively narrow, tree-lined street with many residential viewers. The aerial structure in this location would be out-of-scale with the existing development and would require the removal of street trees. As noted in Section 3.4, the effects of Alignment T4 along Westpark Drive could only be mitigated by relocating the facility elsewhere.

Alignment T4 is also expected to have direct visual impacts on an adjacent hotel (near the Route 123/International Drive intersection) and an office building near the intersection of Route 7 and Westpark Drive. Because these impacts are related to the proximity of the structure, mitigation would be to move the alignment farther away from the hotel and the office building. Otherwise, the visual impact could not be mitigated.

All other visual impacts for Alignment T4 would be similar to those for Alignments T1, T6, and T9.

By locating certain segments underground, Alignment T14 would eliminate the impact at the hotel, and would eliminate some of the impacts along Westpark Drive. The alignment would still have substantial visual impacts along the eastern end of Westpark Drive and on the office building near Route 7. At other locations, Alignment T14 would have similar impacts to the other Metrorail alignment options.

Alignment T14 would have higher costs than the alignments documented in the Draft EIS.

Draft cost estimates prepared by the Project Team indicate that Alignment T14 would cost $3.174 billion (without financing). This total is approximately $94.1 million higher than that for Alignment T4, and approximately $73 million higher than the cost for Alignment T6 (the most expensive Metrorail alignment option). It is assumed that, due to the relatively short length of the underground sections, Alignment T14 would be constructed using cut-and-cover construction.

Underground construction presents greater risks to project cost and schedule.

Alignment T14 would have greater potential for cost escalation than Alignment T4 because underground construction poses risks that cannot be completely identified prior to actual construction. While it is customary to assess higher cost and schedule contingencies to underground construction to cover these potential exposures, it is not reasonable to assign a sufficient contingency to cover every risk, and maintain a level comparison among alternatives. Most of the significant risks relate to unknown subsurface conditions. Some of these conditions include are outlined below.

Soil conditions. Design of underground facilities typically includes a soil exploration and testing program to determine the type of subsurface material through which the underground facility is to be constructed. However, no matter how extensive the subsurface exploration program, past industry experience has shown that changed soil conditions are frequently encountered. These may require additional costs to design and construct the underground facility to account for the changed conditions, and nearly always cause significant delays.

Utilities. Underground construction requires that utilities be relocated or supported in place during construction. Like soil conditions, design of underground facilities includes an effort to identify and design for all known utilities. However, in an urbanized area like Tysons Corner, unidentified utilities are frequently encountered. Major utilities may require a redesign of certain transit features, or may require additional cost and effort to relocate the utility. In the worst cases, unknown utilities may be encountered and damaged during actual construction, leading to disruption of service to area businesses and residences.

Other Conditions. Other changed conditions can include archaeological finds, changed subsurface water conditions, and unrecorded hazardous materials.

In all of the cases cited, the project risks can be greater than the cost to accommodate the change. Schedules can be severely impacted, leading to increased escalation costs, increased inconvenience to the public, and even delays in opening the project.

Alignment T14 would not offer additional ridership benefits, and would have the same operational complexities as Alignment T4.

Because Alignment T14 would have the same number of stations as Alignment T4, in the same locations, Alignment T14 would be expected to have the same ridership as this alignment option.

As shown in the Draft EIS, Alignment T4 has the lowest ridership of all Metrorail alignments options. Though the alignment would provide greater geographic coverage than the other Metrorail alignments, it would not necessarily provide better access to Tysons Corner than Alignments T1, T6, and T9, because many travelers using the one-way stations would be required to transfer and double back to reach the station within walking distance of their destination.

In addition, Alignment T14, like Alignment T4, would reduce the ability to maintain service during an emergency or disruption along the rail line. As discussed in the Draft EIS, in the event of an emergency or operational problem in Tysons Corner, it would be more difficult to maintain rail service with Alignment T4 than for the other alignments, because of Alignment T4's divergent, single-track configuration. For this alignment, a disruption along one of the single tracks in the core of Tysons Corner would shut down service to two stations. It would be necessary to bus patrons to and from nearby stations to maintain service.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The above evaluation indicates that Alignment T14 would mitigate some of the substantial visual effects associated with Alignment T4, which could not otherwise be mitigated without moving the alignment. However, the alignment would have greater costs than Alignment T4 and additional risks associated with underground construction. In addition, Alignment T14 would not be expected to have additional ridership benefits, and would present the same difficulties in maintaining service during an emergency or disruption as Alignment T4.

Given that Alignment T14 presents one of the few viable approaches for mitigating some of the visual effects associated with Alignment T4, it is recommended for further consideration during the Dulles Corridor Rapid Transit Project preliminary engineering and environmental review process if Alignment T4 is carried forward as the Locally Preferred Alternative.

Appendix C

- Construction Phasing

Alternatives Evaluation Technical Memorandum

Construction Phasing for the Locally Preferred Alternative

The purpose of this technical memorandum is to outline the proposed construction phasing for the Locally Preferred Alternative for the Dulles Corridor Rapid Transit Project, and to document the reasons for selection of the first phase segment. The evaluation of this phasing option is consistent with the *Evaluation Methodology* (November 2000) developed for the project. This memorandum includes a description of the proposed construction phasing, an evaluation of the Wiehle Avenue Extension, and recommendations regarding further analysis.

1.0 PROPOSED PHASING

It is proposed that the Locally Preferred Alternative (LPA) for the Dulles Corridor Rapid Transit Project be constructed in two phases.

The first segment, referred to as the Wiehle Avenue Extension, would extend from the existing Metrorail Orange Line, through Tysons Corner, to Wiehle Avenue. The Wiehle Avenue Station would function as an interim end-of-line station. The number of bus bays at the station would be increased, and Kiss & Ride parking may be increased. No additional long-term parking would be provided for the interim terminal. The Wiehle Avenue Extension would also include construction of the pocket track located west of the Wiehle Avenue Station. The Wiehle Avenue Extension is expected to be complete by 2011.

Extending the line from Wiehle Avenue, through Dulles Airport, to Route 772 in Loudoun County would complete the LPA. This second extension would include the construction of the new Service and Inspection (S&I) Yard on Dulles Airport property. The full LPA would be complete by 2015.

2.0 BACKGROUND

The Draft Environmental Impact Statement (Draft EIS) and the General Plans for the Dulles Corridor Rapid Transit Project were made available for public review and comment on June 28, 2002. Public hearings were held in late July 2002, and the Project Team (consisting of staff from DRPT and WMATA) accepted written comments for a period of 62 days from June 28, 2002 to August 28, 2002.

Based on the evaluation in the Draft EIS and the public comments received, the Project Team recommended the Metrorail Alternative, with Alignment T6 through Tysons Corner and a Metrorail S&I Yard at Site 15, as the LPA. The WMATA Board of Directors approved this LPA on November 21, 2002. On December 19, 2002, the Commonwealth Transportation Board took similar action. The governing bodies of Fairfax County, Loudoun County, and the Town of

Herndon, as well as the Metropolitan Washington Airports Authority, also endorsed the Metrorail Alternative as the LPA.

Based on subsequent agency coordination, DRPT and WMATA modified the selected LPA to allow for construction of the project in two phases. Guidance on federal funding limitations and the timing of local funding availability were considered in the identification of the proposed phasing, which is described in Section 2.0. The reasons for the selection of the initial construction segment are outlined in Section 3.0.

3.0 EVALUATION

As shown in the evaluation below, the proposed phasing, including an end-of-line station at Wiehle Avenue, would allow the initial Dulles Corridor line to provide the maximum benefit possible with the available resources. Service to this interim terminal location could be accommodated without constructing a new Metrorail S&I yard, but would require improvements to the West Falls Church Yard.

An interim terminal at Wiehle Avenue would allow the initial segment of the Dulles Corridor line to accommodate a substantial amount of the projected ridership demand for the LPA.

As shown in Table 6.3-10 in the Draft EIS, the majority of ridership demand for the LPA (Metrorail Alignment T6) is associated with stations in Tysons Corner and the Mid-Corridor. Approximately 43 percent of the total daily boardings in the corridor are at Tysons Corner stations, and an additional 33 percent of daily boardings are at the Wiehle Avenue, Reston Parkway, and Herndon-Monroe stations. In the Mid-Corridor, most of these projected boardings are at the Wiehle Avenue Station (6,645 boardings) and the Herndon-Monroe Station (7,863 boardings).

The Wiehle Avenue Extension would provide access for most of the trips associated with Tysons Corner, as well as many of the trips associated with the Mid-Corridor. An interim terminal at Wiehle Avenue would provide reasonably good access for most Mid-Corridor passengers, because the majority of the boardings indicated above represent area residents that drive to the park-and-ride stations and travel to destinations in Tysons Corner, Arlington County, and the region's core. Moreover, given that the Herndon-Monroe Station is only 2.5 miles from the Wiehle Avenue Station, the proposed interim terminal would still provide reasonably good access for patrons that would otherwise be attracted to the Herndon-Monroe Station. (The typical catchment area for a park-and-ride station is 3 to 5 miles, and can be much greater for a terminal station.)

Overall, when the proposed Wiehle Avenue Extension is complete, the initial segment of the Dulles Corridor line can be expected to provide reasonably good access for approximately 65 percent of the passengers attracted to the full LPA.

An initial phase that provides Metrorail service beyond Tysons Corner is important to the community.

Based on comments received during the public review process, the proposed Wiehle Avenue Extension would be acceptable to the community. Many commenters expressed a desire to have Metrorail service in the Mid-Corridor sooner rather than later, and were concerned that the BRT/Metrorail and Phased Implementation alternatives—in which Metrorail service ended at

Tysons Corner (permanently or on an interim basis)—would delay the provision of rail service beyond Tysons Corner or result in rail never being extended further. Some community members proposed an alternative that would extend service to the Mid-Corridor before Tysons Corner (due to the strong demand in Tysons Corner, and other reasons, this alternative was eliminated from further consideration).

The proposed first phase is affordable and fundable.

The cost for constructing the LPA to Wiehle Avenue is estimated to be approximately $1.5 billion, which is roughly half the cost presented for the Metrorail Alternative (Alignment T6) in the Draft EIS. With this cost reduction, the project would be more competitive than other transit projects for Section 5309 New Starts funding.

A new Metrorail S&I yard would not be required to accommodate service to an interim terminal at Wiehle Avenue.

In response to some of the comments received on the Draft EIS, the Project Team previously stated that it would not be possible to support operations beyond Tysons Corner without a new service and inspection yard.

Subsequent analysis of the maintenance and storage requirements for a shorter segment of the full Metrorail Alternative demonstrated that with extensive modifications, the West Church Yard could accommodate new rail service as far as Wiehle Avenue.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The above evaluation indicates that the Wiehle Avenue Extension, as proposed, would provide a logical interim terminal for the adopted LPA. Given that:

- The Wiehle Avenue Extension, when complete, would provide many of the travel benefits provided by the full LPA;
- The Wiehle Avenue Extension would cost approximately half of the cost for the full LPA, and would, therefore, be easier to fund at the local and federal level; and
- A new S&I yard would not be needed to accommodate service to Wiehle Avenue;

the proposed construction phasing is recommended for further consideration during the Dulles Corridor Rapid Transit Project environmental review process.

Appendix D

- TPSS-2
- TBS-2
- Tysons West Station Entrance and Facilities

Post-Hearing Technical Memorandum
Traction Power Substation #2

The purpose of this technical memorandum is to document the evaluation of relocation for Traction Power Substation #2 (TPSS-2) that is being conducted during the environmental review phase of the Dulles Corridor Rapid Transit Project. This analysis is consistent with the intent of the Project's evaluation methodology that had been developed for the evaluation of alternative modes, lines, stations and yards. It includes background information, description of the relocation, and the Project Team's conclusions and recommendations. A May 18, 2004 post-hearing conference was held by DRPT and WMATA with affected owners and other stakeholders to receive and consider comments on the relocation.

1.0 PROJECT OVERVIEW

The Virginia Department of Rail and Public Transportation (DRPT), in cooperation with the Federal Transit Administration (FTA), and the Washington Metropolitan Area Transit Authority (WMATA), is proposing to construct a 23.1-mile extension of the existing Metrorail system in the rapidly growing Dulles Corridor in Fairfax and Loudoun Counties, Virginia. The purpose of the Dulles Corridor Rapid Transit Project is to provide high-quality, high-capacity transit service in the Dulles Corridor. New fixed guideway transit in the corridor will result in travel time savings between the corridor and the region's core, expand the reach of the existing regional rail system, offer a viable alternative to automobile travel, and support future development.

The Locally Preferred Alternative for the Project will begin at the existing Metrorail Orange Line (between the East and West Falls Church stations) in Fairfax County, Virginia, travel through Tysons Corner, continue to Dulles International Airport and terminate at Route 772 in Loudoun County, Virginia. Most of the extension would be constructed in the median of the Dulles Connector Road and Dulles International Airport Access Highway (DIAAH), but the alignment would also directly serve Tysons Corner and Dulles International Airport. The extension would include 11 new Metrorail stations, a rail yard site on Dulles International Airport property, improvements of the existing rail yard at West Falls Church and ancillary facilities such as traction power substations and tie breaker stations. Four of the new Metrorail stations would be located within Tysons Corner. DRPT plans to construct the Project in two major phases.

2.0 BACKGROUND

The current environmental review phase, which conforms to the National Environmental Policy Act (NEPA), began with a formal scoping process in July 2000. DRPT and WMATA conducted joint public hearings on the Draft EIS and Proposed General Plans in July 2002. Based on those two documents and the results of the public hearings, the Virginia Commonwealth Transportation Board and the WMATA Board of Directors selected Metrorail as the Project's Locally Preferred Alternative over the alternatives of bus rapid transit and a phased implementation of BRT and Metrorail.

Additional background on the Project is described in the June 2002 Draft Environmental Impact Statement and Section 4(f) Evaluation (Draft EIS) and the October 2003 Supplemental Draft EIS (Supplemental Draft EIS). The Supplemental Draft EIS and Proposed General Plan-Revisions also documented the evaluation of phased construction of the LPA and other Project design refinements.

The Draft EIS and Proposed General Plans depicted the location of TPSS-2 along the south roadside of the Dulles Connector Road within the existing right-of-way. Vehicular access to TPSS-2 was via the Dulles Connector Road. In response to the comments in the public hearing record and for safety reasons, the Project Team decided to change the access for TPSS-2 and other ancillary facilities from freeway access to local road access. A driveway would provide local road access from Olney Road through undeveloped land of the Dulles Connector Road. The change of access was documented in the Supplemental Draft EIS and Proposed General Plan-Revisions. DRPT and WMATA then conducted joint public hearings in December 2003 on these two documents. After the public hearings, the Project Team further decided to move TPSS-2 westward to the southwest undeveloped quadrant of the Magarity Road underpass of the Dulles Connector Road in order for the TPSS-2 to be away from the shoulder of the Dulles Connector Road. The result was the recommendation of the Project Team, approved by the two Boards, to hold a post-hearing conference on the relocation of TPSS-2.

3.0 DESCRIPTION OF RELOCATION OF TRACTION POWER SUBSTATION #2

The operation of Metrorail requires traction power substations. TPSS are facilities that supply direct current power for the rail system. The power supplies electricity as high voltage current, which the TPSS reduces and converts to direct current and feeds to the contact rail that powers the rail vehicles. Between the contact rails and a traction power substation there must run underground electrical cable ducts; the electrical cable is 750-volt direct current. The building dimension of the TPSS-2 will be 150 x 45 feet; the height will be 13 feet. WMATA makes routine visits to its traction power substations, approximately once a week. The WMATA maintenance vehicle during these visits is usually a pick-up truck. WMATA replaces internal equipment of a traction power substation approximately once every five to seven years. The WMATA maintenance vehicle during the replacement visit is usually a large truck with a crane. The TPSS-2 will have an underground electric grounding grid, which is typically located with the permanent surface easement of a traction power substation; the grid may be underneath the TPSS-2 if the soil conditions are suitable.

The proposed new location of TPSS-2 is shown in Figure 1. Figure 2 is the property identification plan, which is subject to change during preliminary engineering and final design.

4.0 POST-HEARING EVALUATION

The Project Team conducted a post-hearing conference for the residential property owners and any tenants in the viewshed of TPSS-2 in its proposed relocation and for the property owners that are directly affected by the relocation. The latter are

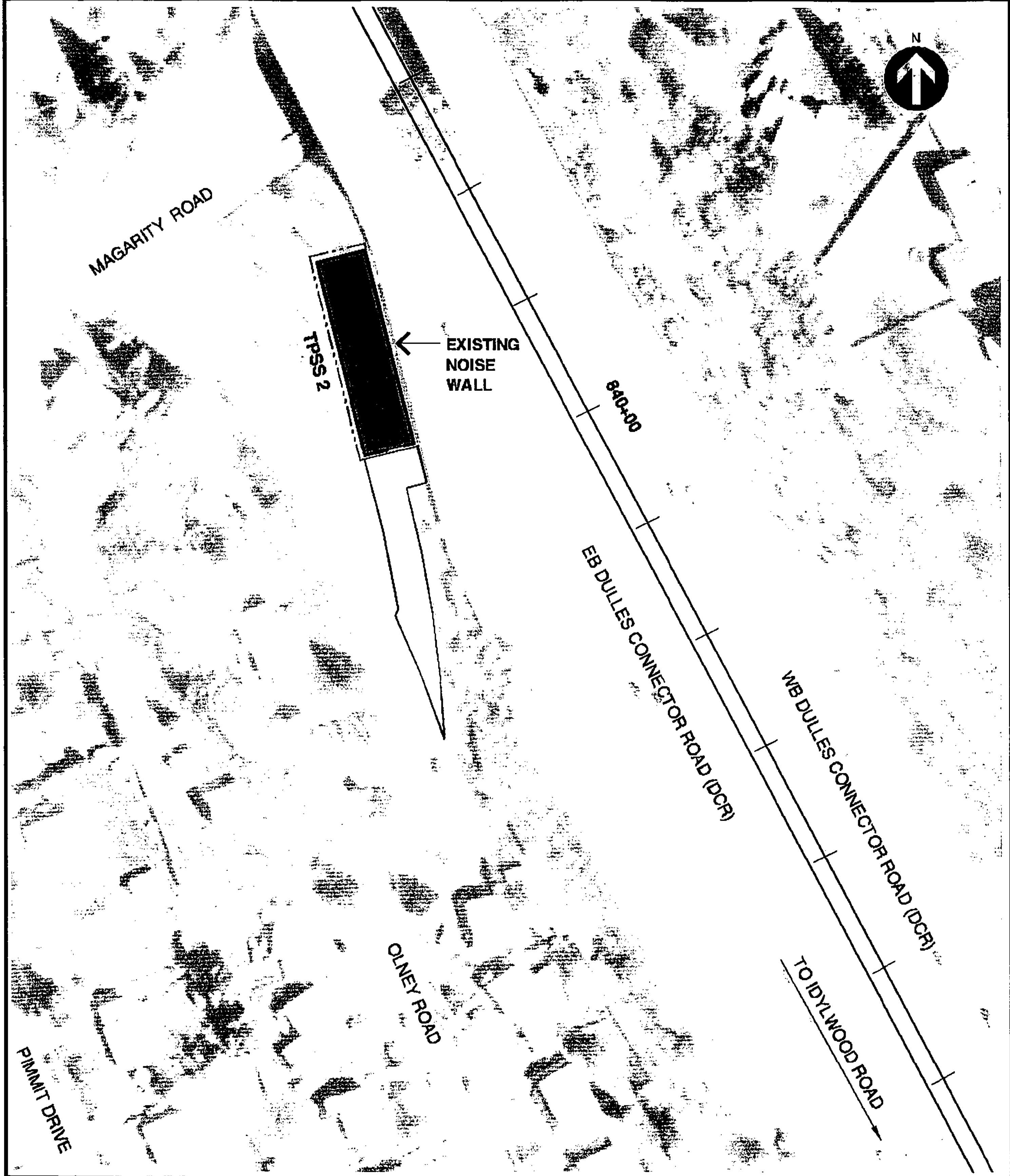
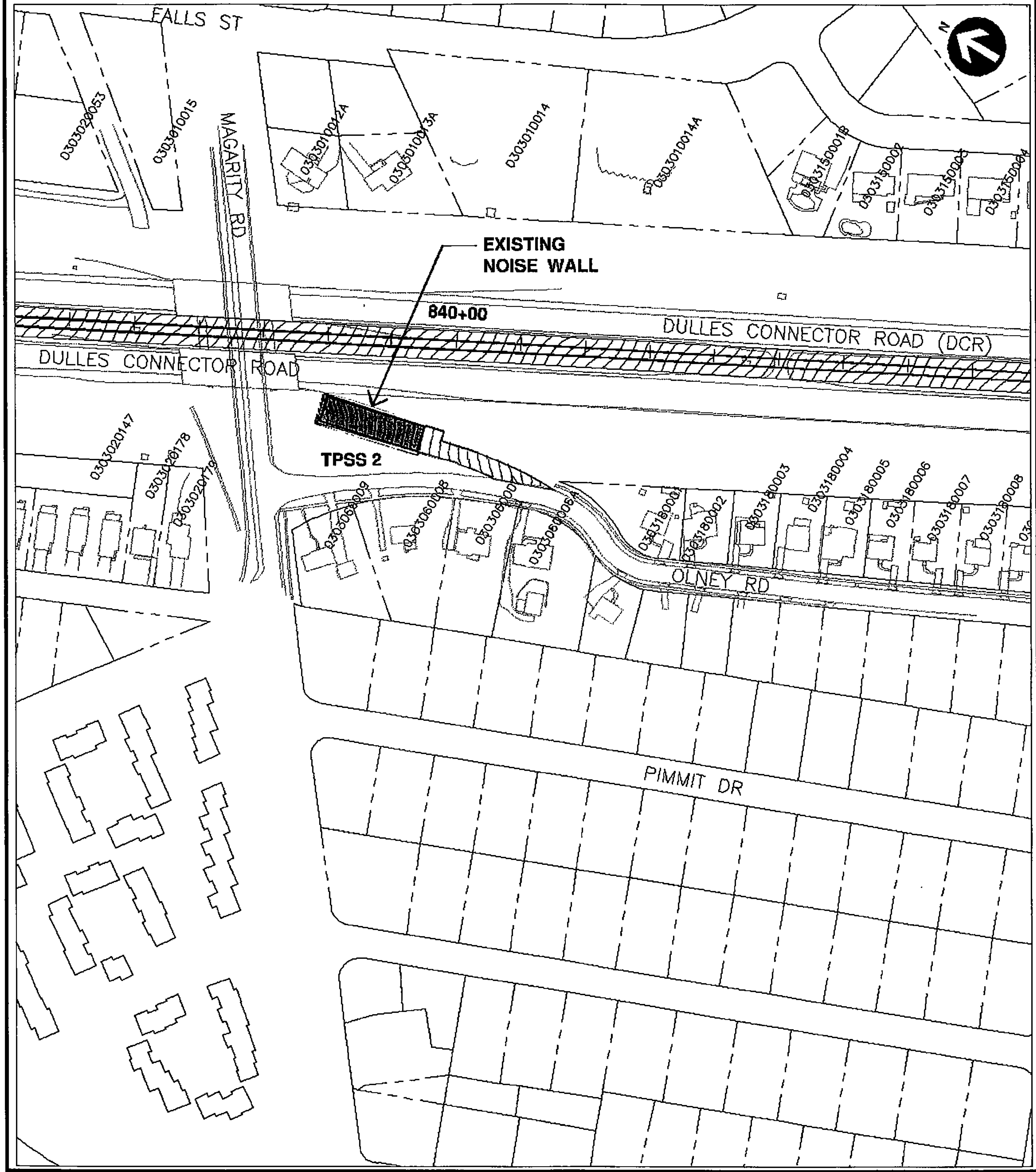


Figure 1

Traction Power Substation #2 Relocation

Dulles Corridor
Rapid Transit Project



LEGEND

——— LIMIT OF RIGHT–OF–WAY
– – – PROPERTY LINE
▧ PERMANENT SURFACE EASEMENT
▦ PERMANENT UNDERGROUND EASEMENT
▦ PERMANENT AERIAL EASEMENT
0293010071 TAX PARCEL ID NO.
TM29–3 TAX MAP SHEET NO.
▨ POTENTIAL CONTRACTOR WORK AREA

Figure 2

Traction Power Substation #2 Property Identification Plan

Dulles Corridor Rapid Transit Project

unchanged: FAA, MWAA and VDOT. A post-hearing conference served as a mini-public hearing and follows a similar process of formal notification, conference itself, record of comments, conference report with recommendation, its review, conference report supplement with final recommendation, and action by the Commonwealth Transportation Board (or the DRPT Director) and WMATA Board of Directors. For the conference, the Project Team notified those parties who have expressed interest and/or delivered comments into the public hearing record with respect to TPSS-2. The post-hearing conference generated no comments from the officials, stakeholders or residents.

4.1 Property Acquisition and Effects

A significant Project goal is to limit, to the extent possible, right-of-way acquisition impacts that would result from implementation of the Project. The relocation of TPSS-2 and its access driveway are on undeveloped land of the Dulles Connector Road and are on the Olney Road side of the existing wood noise wall. The land is owned by FAA, leased by FAA to MWAA, and maintained by VDOT. WMATA would be responsible for the maintenance of the TPSS-2 asphalt driveway and for keeping it clear of snow and any debris.

4.2 Visual and Aesthetic Effects

A typical traction power substation is a masonry building with brick exterior and flat roof. It has at least two doors, one of which is large garage-style roll-up. For safety and security, WMATA places warning signs on the building's exterior.

The previous location, shown in the Proposed General Plans, would have required the removal of vegetation that screened the Dulles Connector Road from the Olney Road residences. The new location avoids the need to remove existing roadside vegetation but will remove a limited number of trees and shrubs on the surplus land of the Dulles Connector Road.

4.3 Safety and Security

The TPSS-2 building and its underground electrical cable ducts house incoming 34.5-kilovolt and outgoing 750-volt electrical systems. The building will be secured and signed. The electric grounding grid should not be a safety or security concern.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The westward relocation of TPSS-2 to the southwest quadrant of the Magarity Road underpass of the Dulles Connector Road is upon undeveloped public land of the Dulles Connector Road but on the residential side of the Road's wooden noise wall. The land is owned by FAA, leased by FAA to MWAA and maintained by VDOT. The driveway of the substation would connect with Olney Drive. WMATA would be responsible for the maintenance of the driveway and of the land within the permanent easement of the substation.

The Draft EIS and Proposed General Plans had depicted the first location of TPSS-2 along the south roadside of the Dulles Connector Road within the existing right-of-way.

Vehicular access to TPSS-2 would have been via the Dulles Connector Road. For safety reasons, the Project Team decided to change the access for TPSS-2 and other ancillary facilities from freeway access to local road access. The Project Team further decided to move TPSS-2 westward to the southwest, undeveloped quadrant of the Magarity Road underpass of the Dulles Connector Road in order for the TPSS-2 to be away from the shoulder of the Dulles Connector Road.

That first location would have required the removal of vegetation that screened the Dulles Connector Road from the Olney Road residences. The new location avoids the need to remove existing roadside vegetation but will remove a limited number of trees and shrubs on the undeveloped land of the Dulles Connector Road.

Based on these findings, the Project Team recommends the evaluation of the new location of the TPSS-2 in the Final EIS.

Post-Hearing Technical Memorandum
Tie Breaker Station #2

The purpose of this technical memorandum is to document the evaluation of alternative locations for Tie Breaker Station #2 (TBS-2) that is being conducted during the environmental review phase of the Dulles Corridor Rapid Transit Project. This analysis is consistent with the intent of the Project's evaluation methodology that had been developed for the evaluation of alternative modes, lines, stations and yards. It includes background information, description of the alternative locations, and the Project team's conclusions and recommendations. A May 18, 2004 post-hearing conference was held by DRPT and WMATA with affected owners and other stakeholders to receive and consider comments on these alternative locations.

1.0 PROJECT OVERVIEW

The Virginia Department of Rail and Public Transportation (DRPT), in cooperation with the Federal Transit Administration (FTA), and the Washington Metropolitan Area Transit Authority (WMATA), is proposing to construct a 23.1-mile extension of the existing Metrorail system in the rapidly growing Dulles Corridor in Fairfax and Loudoun Counties, Virginia. The purpose of the Dulles Corridor Rapid Transit Project is to provide high-quality, high-capacity transit service in the Dulles Corridor. New fixed guideway transit in the corridor will result in travel time savings between the corridor and the region's core, expand the reach of the existing regional rail system, offer a viable alternative to automobile travel, and support future development.

The Locally Preferred Alternative for the Project will begin at the existing Metrorail Orange Line (between the East and West Falls Church stations) in Fairfax County, Virginia, travel through Tysons Corner, continue to Dulles International Airport and terminate at Route 772 in Loudoun County, Virginia. Most of the extension would be constructed in the median of the Dulles Connector Road and Dulles International Airport Access Highway (DIAAH), but the alignment would also directly serve Tysons Corner and Dulles International Airport. The extension would include 11 new Metrorail stations, a rail yard site on Dulles International Airport property, improvements of the existing rail yard at West Falls Church and ancillary facilities such as traction power substations and tie breaker stations. Four of the new stations would be located within Tysons Corner. DRPT plans to construct the Project in two major phases.

2.0 BACKGROUND

The current environmental review phase, which conforms to the National Environmental Policy Act (NEPA), began with a formal scoping process in July 2000. DRPT and WMATA conducted joint public hearings on the Draft EIS and Proposed General Plans in July 2002. Based on those two documents and the results of the public hearings, the Virginia Commonwealth Transportation Board and the WMATA Board of Directors selected Metrorail as the Project's Locally Preferred Alternative over the alternatives of bus rapid transit and a phased implementation of BRT and Metrorail.

Additional background on the Project is described in the June 2002 Draft Environmental Impact Statement and Section 4(f) Evaluation (Draft EIS) and the October 2003 Supplemental Draft EIS (Supplemental Draft EIS). The Supplemental Draft EIS and Proposed General Plan-Revisions also documented the evaluation of phased construction of the LPA and other Project design refinements.

The Draft EIS and Proposed General Plans depicted the location of TBS-2 along the south roadside of the Dulles Connector Road within the existing right-of-way. Vehicular access to TBS-2 was via the Dulles Connector Road. In response to the comments in the public hearing record and for safety reasons, the Project Team decided to change the access to TBS-2 and other ancillary facilities from freeway access to local road access. That change of access caused the location of TBS-2 to shift to the north roadside of the Dulles Connector Road. Although TBS-2 was located within the existing right-of-way, access would be provided via a driveway from the Baldwin Drive cul-de-sac across residential property. This change of location and access was documented in the Supplemental Draft EIS and Proposed General Plan-Revisions. DRPT and WMATA then conducted joint public hearings in December 2003 on these two documents. The record of the hearings included numerous comments on TBS-2 from the affected residential property owners and their neighbors on Baldwin Drive. The result was the recommendation of the Project Team, approved by the two Boards, to hold a post-hearing conference on alternative locations for TBS-2.

3.0 DESCRIPTION OF OPTIONS FOR TIE BREAKER STATION #2

The operation of Metrorail requires tie breaker stations. These are usually located at crossovers in the rail tracks. TBS-2 would support two single crossovers in the rail tracks in the median of the Dulles Connector Road. A tie breaker station permits WMATA to break the rail line into sections, allowing power in one or more sections to be shut down for maintenance without affecting the power supply to the rest of the system. Between the rail tracks and a tie breaker station there must run underground electrical and communication cable ducts; the electrical cable is 750-volt direct current. The building that will contain TBS-2 will also include a remote control room. The combined building dimension of the TBS-2 and the remote control room will be 65 x 20 feet; the height will be 13 feet. The front of the building would have a 20-foot wide asphalt or concrete apron. WMATA makes routine visit to its tie breaker stations approximately once a month. WMATA replaces internal equipment of a tie breaker station approximately once every five years. The WMATA maintenance vehicle during these visits is usually a pick-up truck. The TBS-2 will have an underground electric grounding grid, which is typically located with the permanent surface easement of a tie breaker station; the grid may be underneath the TBS-2 if the soil conditions are suitable.

In response to the comments in the record of the December 2003 hearings, the Project Team developed and evaluated three alternative locations: Options A, B and C. Each option is summarized below and shown in Figure 1. Figure 2 is the property identification plan of the three options, which is subject to change during preliminary engineering and final design.

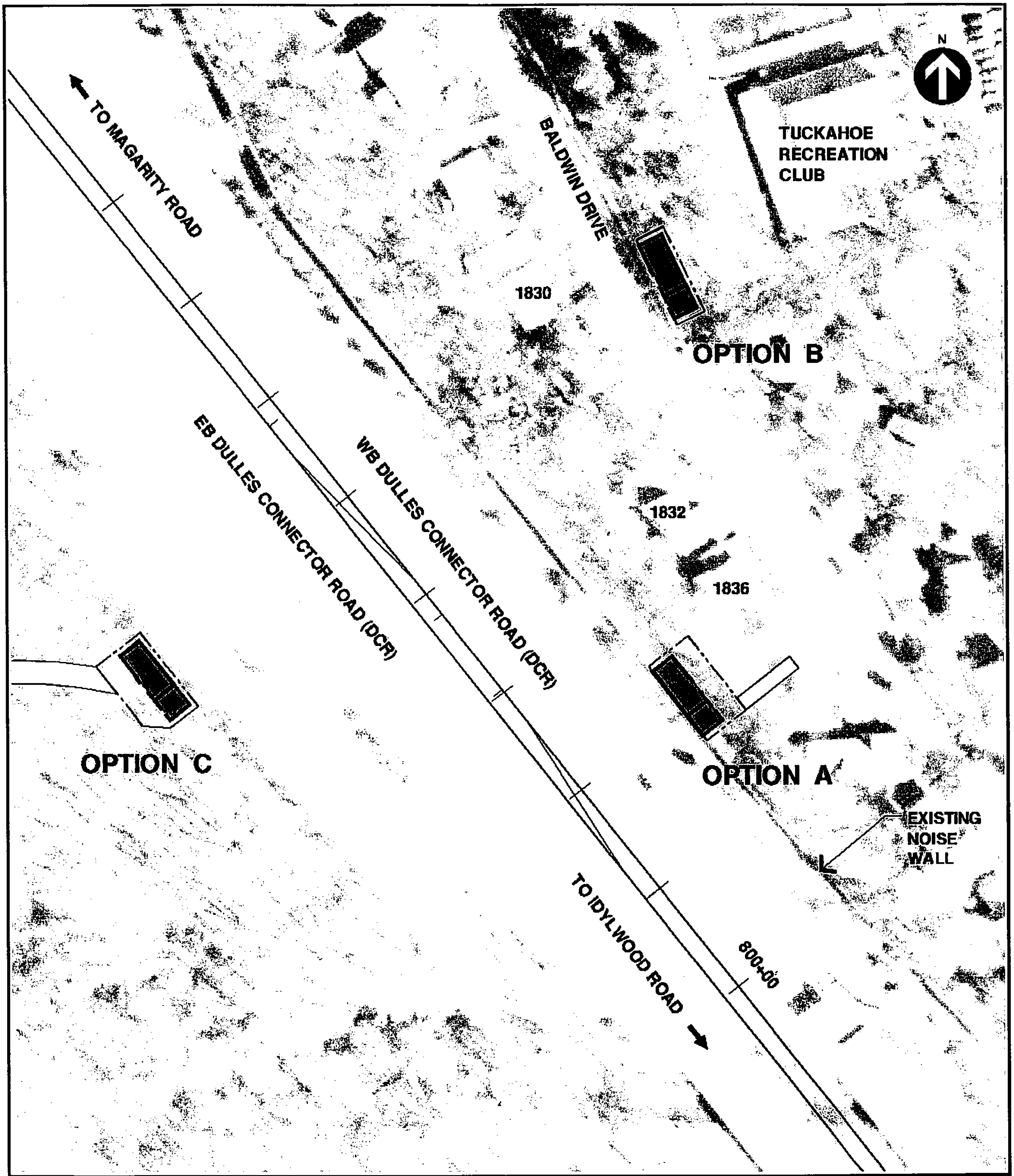
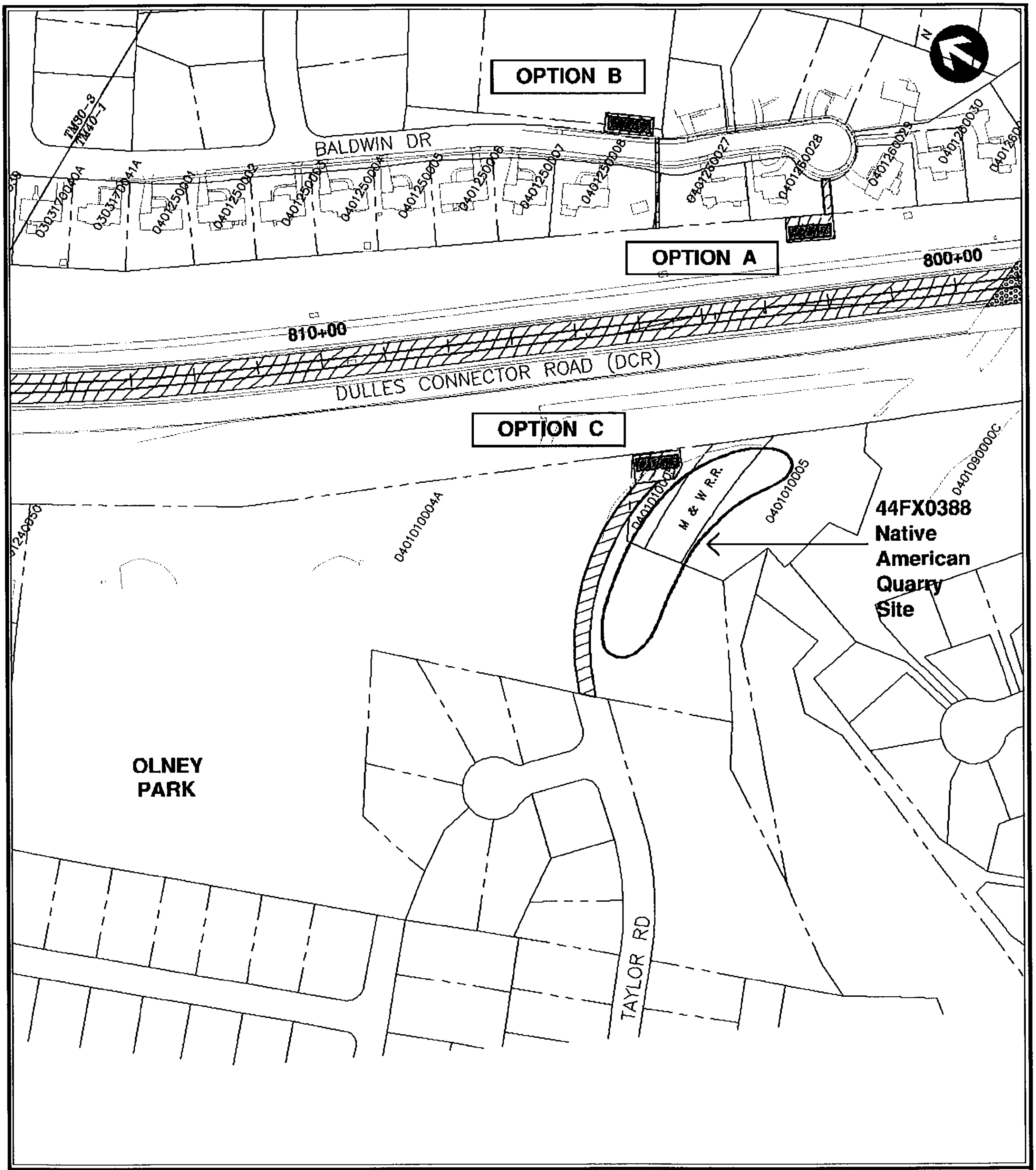


Figure 1

Tie Breaker Station #2 Options

Dulles Corridor
Rapid Transit Project



LEGEND

———	LIMIT OF RIGHT-OF-WAY
– – –	PROPERTY LINE
▨	PERMANENT SURFACE EASEMENT
▦	PERMANENT UNDERGROUND EASEMENT
▦	PERMANENT AERIAL EASEMENT
0293010071	TAX PARCEL ID NO.
TM29-3	TAX MAP SHEET NO.
▨	POTENTIAL CONTRACTOR WORK AREA

Figure 2

Tie Breaker Station #2 Options Property Identification Plan

Dulles Corridor
Rapid Transit Project

- Option A is essentially that of the Proposed General Plans-Revisions of the Supplemental Draft EIS. It has shifted, however, towards the cul-de-sac of Baldwin Drive in order to be further away from the shoulder of the Dulles Connector Road. This new location is within the right-of-way of the Dulles Connector Road but on the residential side of the Road's wooden noise wall. The driveway of Option A connects with Baldwin Drive and would traverse the side yard of the 1836 Baldwin Drive residence. The underground electrical cable ducts would be solely within the right-of-way of the Dulles Connector Road. The underground electric grounding grid would likely be within the same right-of-way, if not underneath TBS-2.

- Option B is on the private land of the Tuckahoe Recreation Club; this southeast corner of the Club is wooded and has a miniature golf course. There would be no need for a driveway for Option B; the WMATA maintenance vehicles would park along Baldwin Drive. The underground electrical cable ducts would be underneath Baldwin Drive and under the yard(s) of the 1830 and 1832 Baldwin Drive residences. The underground electric grounding grid would likely be underneath TBS-2 or in an additional easement area.

- Option C is on undeveloped, landlocked private land; its driveway would connect with the dead-end of Taylor Road and traverse Olney Park, owned by Fairfax County Park Authority. This eastern part of the park is undeveloped woods but has a known archaeological site. (44FX388 - a former Native American quarry) in its vicinity. Based on field testing and past mapping of the site, neither the proposed access driveway nor the TBS-2 building would affect this archaeological site. The underground electrical cable ducts would be solely within the right-of-way of the Dulles Connector Road. The underground electric grounding grid would likely be within the same right-of-way, if not underneath TBS-2.

The Project Team believes that Options A, B and C described above adequately represent the range of reasonable alternatives. The Conference's evaluation of these options identified the issues that should be considered in the ultimate selection of the TBS-2 location.

4.0 POST-HEARING EVALUATION

The Project Team conducted a post-hearing conference for the property owners that are directly affected by these alternative site plans. The post-hearing conference served as a mini-public hearing and followed a similar process of formal notification, conference itself, record of comments, conference report with recommendation, its review, conference report supplement with final recommendation, and action by the Commonwealth Transportation Board (or the DRPT Director) and WMATA Board of Directors. For the conference, the Project Team notified those parties who have expressed interest and/or delivered comments into the public hearing record with respect to TBS-2.

4.1 Property Acquisition and Effects

A significant Project goal is to limit, to the extent possible, right-of-way acquisition impacts that would result from implementation of the Project.

- Option A will require a permanent surface easement for the apron and driveway of TBS-2 from the 1836 Baldwin Drive residence. The TBS-2 building itself will be within the right-of-way of the Dulles Connector Road. TBS-2 and its driveway will be in a residential setting.

- Option B will require a permanent surface easement for the TBS-2 building and its electric grounding grid from the Tuckahoe Recreation Club. TBS-2 will displace a miniature golf course and mature pine trees in the southern corner of the Recreation Club. Residences across Baldwin Drive will view TBS-2.

- Option C will require a permanent surface easement for the TBS-2 building from the landlocked Hall property and for the access driveway from the Fairfax County Park Authority. At this time, the Hall property is undevelopable and inaccessible. The eastern part of Olney Park is undeveloped and wooded, but includes portions of a previously-recorded archaeological resource. Based on boundary information compiled in previous surveys and recent field testing, this driveway avoids the archaeological quarry site

4.2 Visual and Aesthetic Effects

A typical tie breaker station is a masonry building with brick exterior and flat roof. It has at least two doors, one of which is garage-style roll-up. For safety and security, WMATA places warning signs on the building's exterior.

Since Options A is in a residential setting and Option B is in both a residential setting and recreation facility, these two locations would be designed to be compatible with surrounding development. DRPT and WMATA would use established architectural designs, appropriate building materials, and colors to be in the context of Baldwin Drive. The driveway of Option A might be of alternate materials, such as geo-grid or open concrete block with grass turf in their cells; the WMATA Department of Operations would decide on the driveway structure and surface.

Option C removes the trees in the route of its driveway and in the location of TBS-2 itself. Also, the TBS-2 building will be visible from the Dulles Connector Road in a section of the Road that is lined for the most part by landscaping and woods.

4.3 Use of Parkland and Recreation Center

In a good faith effort, the Project Team developed Option C to be an alternative to Options A and B. Option C is distant from residences while Options A and B are in the midst of residential development. The driveway of Option C, however, uses land of the public Olney Park and would remove the trees in its route. The parkland use is precluded by a Federal regulation, known as Section 4(f), an abridged version of which follows:

> *The Secretary [of the U.S. Department of Interior] may approve a transportation…project requiring the use of publicly owned land of a public park,…of …local significance (as determined by the…local officials having jurisdiction over the park …) only if,*
>
> *(1) there is no prudent and feasible alternative to using that land; and*
>
> *(2) the…project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuges or historic site resulting from the use.*

Options A and B appear to be feasible and prudent alternatives and should therefore be selected over Option C. To reject Options A and B as not being feasible and prudent, any of the following reasons must apply: (1) not meeting the project purpose and need, (2) excessive cost of construction, (3) severe operational or safety problems, (4) unacceptable adverse social, economic or environmental impacts, (5) serious community disruption, or (6) an accumulation of a lesser magnitude of the foregoing types of factors.

If the Fairfax County Park Authority would determine that Olney Park is not of local significance, there is a possibility that the Section 4(f) would not apply to the driveway's use of the parkland. The significance determination by the Park Authority must consider the significance of the entire property and not just the portion of the property being used for the project. Significance means that in comparing the availability and function of the recreation and park area with the recreational and park objectives of that community, the land in question plays an important role in meeting those objectives.

The Section 4(f) would not apply to Option B's location in the property of the Tuckahoe Recreation Club since this is a private facility. However, if selected, the Project Team in coordination with the Club would plan and design the TBS-2 to minimize harm to the Club.

4.4 Safety and Security

The TBS-2 building and its underground electrical cable ducts house 750-volt electrical systems. The building will be secured and signed, and the ducts will be encased in concrete. The electric grounding grid should not be a safety or security concern.

4.5 Access

For each of the three options, the TBS-2 building has an asphalt or concrete apron that must be clear of materials and debris. For vehicular access, described below, WMATA would likely be responsible for the maintenance of the TBS-2 driveways and for keeping them clear them of snow and any debris.

- Option A's driveway would connect with Baldwin Drive and would traverse the side yard of the 1836 Baldwin Drive residence. The driveway would have its own driveway apron on the Baldwin Drive cul-de-sac. Unauthorized vehicles could not use the driveway nor block the apron.

- Option B has no driveway. The WMATA maintenance vehicles would park along Baldwin Drive. The Baldwin Drive sidewalk would likely serve as the TBS-2 building apron.

- Option C's driveway would traverse the undeveloped, wooded, eastern part of Olney Park. The driveway would likely be asphalt. If the driveway has a sole function of access to TBS-2, then WMATA would likely maintain and clear the driveway. The driveway will connect to Taylor Road, which presently dead-ends at the Park.

4.6 Capital Costs

The Project Team did not consider the capital costs of these alternative site plans as a determinant in this evaluation. Capital costs include right-of-way, site preparation, construction, engineering and administration, insurance and contingency.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Project Team recommends Option A as the location for TBS-2 for evaluation in the Final EIS instead of Options B or C. As identified by the Tuckahoe Recreation Club, Option B would displace its miniature golf course, remove mature trees, claim space that visiting swim teams use during meets, and could possibly be an attractive nuisance for Club members. Consequently, Option B generated strong opposition from Club officers and membership. Unlike Options A and C, Option B would require the construction of the underground electric cable ducts across residential property. In regards to Option C, it could not be recommended because both Options A and B are 'feasible and prudent' alternatives as defined by the above referenced federal law that protects parklands from transportation projects.

The Team recommends that a new wooden noise wall surround the TBS-2 for its security, for enhanced community safety and for the aesthetics of the neighborhood. Since TBS-2 would not be visible from the Baldwin Drive neighborhood, it would not receive any architectural treatment. The new wooden noise wall would have doors at the location of the doors of the TBS-2 and the remote train control room. The height of the new wooden noise wall would be sufficient to screen the TBS-2, which has a height of 13 feet above its concrete slab foundation.

As currently planned, the location of the access driveway and any temporary construction easement will be fully within the property of 1836 Baldwin Drive. The centerline of the access driveway will be parallel to the property line between 1836 and 1838 Baldwin Drive. Any construction work area between the completed driveway and the property line will likely be part of the permanent easement.

The position of the Project Team in regard to the material of the access driveway and apron remains the same as discussed above: the driveway and apron might be of alternate materials, such as geo-grid or open concrete block with grass turf in their cells; the type of materials will be determined during preliminary engineering and final design. During the same phases, the drainage of the TBS-2 site, including its driveway and apron, will be addressed. Arrangements for landscaping of the site will be addressed in coordination with affected property owners.

Post-Hearing Technical Memorandum
Tysons West Station Entrance and Facilities

The purpose of this technical memorandum is to document the evaluation of alternative site plans for the Tysons West station facilities that is being conducted during the environmental review phase of the Dulles Corridor Rapid Transit Project. This analysis is consistent with the intent of the Project's evaluation methodology that had been developed for the evaluation of alternative modes, lines, stations and yards. It includes background information, a description of the alternative site plans, and the Project team's conclusions and recommendations. A May 18, 2004 post-hearing conference on these alternative site plans was held by DRPT and WMATA with affected owners, tenants, and other stakeholders to receive and consider comments and suggestions on these alternative site plans.

1.0 PROJECT OVERVIEW

The Virginia Department of Rail and Public Transportation (DRPT), in cooperation with the Federal Transit Administration (FTA), and the Washington Metropolitan Area Transit Authority (WMATA), is proposing to construct a 23.1-mile extension of the existing Metrorail system in the rapidly growing Dulles Corridor in Fairfax and Loudoun Counties, Virginia. The purpose of the Dulles Corridor Rapid Transit Project is to provide high-quality, high-capacity transit service in the Dulles Corridor. New fixed guideway transit in the corridor will result in travel time savings between the corridor and the region's core, expand the reach of the existing regional rail system, offer a viable alternative to automobile travel, and support future development.

The Locally Preferred Alternative (LPA) for the Project will begin at the existing Metrorail Orange Line (between the East and West Falls Church stations) in Fairfax County, Virginia, travel through Tysons Corner, continue to Dulles International Airport and terminate at Route 772 in Loudoun County, Virginia. Most of the extension would be constructed in the median of the Dulles Connector Road and Dulles International Airport Access Highway (DIAAH), but the alignment would also directly serve Tysons Corner and Dulles International Airport. The extension would include 11 new Metrorail stations, a rail yard site on Dulles International Airport property, and improvements of the existing rail yard at West Falls Church. Four of the new stations would be located within Tysons Corner. DRPT plans to construct the Project in two major phases. The Tysons West Station would be constructed as part of the first phase, the Wiehle Avenue Extension.

2.0 BACKGROUND

Additional background on the Project and the rationale for the location of the Tysons West Station entrance and facilities is described in the June 2002 Draft Environmental Impact Statement and Section 4(f) Evaluation (Draft EIS). The Draft EIS built on the findings of the Dulles Corridor Transportation Study (1997), a Major Investment Study (MIS) that was the prelude to the current phase of environmental review. That study recommended a seamless extension of the Metrorail system to serve the Dulles Corridor. The study's Volume II includes a set of the plan and profile drawings and station site plan drawings. These drawings depict the Tysons West Station with bus stops along the service roads of Route 7 and a parking garage at the front of the Sheraton Premier Tysons Corner. A *Supplement to the Dulles Corridor Transportation Study* (1999) evaluated the potential for using Bus Rapid Transit (BRT) in the Corridor and the phased implementation of Metrorail in the Corridor. An intermediate phase, Phase IV-A, was to be Metrorail through Tysons Corner and BRT for the remainder of the Corridor. During this phase, the Tyson West Station would have been the intermodal transfer facility between Metrorail and BRT.

The current National Environmental Policy Act (NEPA) review of the Project began with a formal scoping process in Summer 2000. At the outset of scoping, the Project Team proposed and depicted a park-and-ride structure and other station facilities for the Tysons West Station. As the Project Team prepared the General Plans for the Project, the station facilities became the intermodal transfer facility of Metrorail and BRT, located upon the parcels of Security Moving and Storage and Templeton Oldsmobile automotive dealership. The June 2002 Proposed-General Plans included the site plan of the station facilities and special dedicated freeway ramps from the Dulles International Airport Access Highway for the BRT vehicles. The station facilities included a 2,000-space park-and-ride facility above the bus bays and Kiss & Ride facility. During the preparation of the Draft EIS, the Project Team met with the property's landowner and adjacent property owners to review the proposed site plans. Plans for the proposed station facilities at this location were also presented in various public meetings with stakeholders, the Project's public information meetings, and the public hearings on the Draft EIS.

DRPT and WMATA conducted joint public hearings on the Draft EIS and Proposed General Plans in July 2002. Based on those two documents and the results of the public hearings, the Virginia Commonwealth Transportation Board and the WMATA Board of Directors selected Metrorail as the Project's Locally Preferred Alternative over the BRT and Phased Implementation alternatives. The LPA included a Project Team recommendation to reduce the size of the proposed Tysons West park-and-ride facility from 2,000 to 500 spaces, and incorporate this parking into the redevelopment of parcels in the vicinity of the station rather than construct a parking structure as part of the station facilities.

Following the selection of the LPA, FTA recommended that DRPT build the Project in phases to reduce annual Federal funding requirements. Based on this guidance, DRPT identified a phased construction approach, evaluated its environmental effects, and presented these findings to the public for review and comment. The Project's October 2003 *Supplemental Draft EIS* and Proposed General Plan-Revisions documented the evaluation of phased construction of the LPA and other Project design refinements, including the Tysons West Station site plan without the BRT intermodal transfer facility or 2,000-space park-and-ride structure. DRPT and WMATA then conducted joint public hearings in December 2003 on these two documents. The result of the public hearings was the recommendation of the Project Team, approved by the two Boards, to hold a post-hearing conference on alternative site plans for the Tysons West station facilities.

3.0 DESCRIPTION OF OPTIONS FOR THE TYSONS WEST STATION FACILITIES

The October 2003 Supplemental Draft EIS and Proposed General Plans-Revisions included the Project Team's proposal for the Tysons West Station facilities on the site of the former Templeton Oldsmobile automotive dealership, now leased by HBL Incorporated and operated as a Porsche/Audi dealership. The facilities include bus bays, Kiss & Ride and station entrance pavilion. This site had been considered by the Project Team for Tysons West station facilities since the beginning of the Project's NEPA environmental review process, though the size and configuration of facilities at this location varied depending on the alternative being considered (e.g., Bus Rapid Transit (no facilities), Metrorail, and BRT/Metrorail). Following the selection of Metrorail as the LPA, the station facilities proposed at this location were reduced in size and reconfigured.

The record of the December 3 and 11, 2003 public hearings on the Project's Supplemental Draft EIS and the General Plans-Revisions included numerous comments on the proposed Tysons West Station and its facilities. The Fairfax County Board of Supervisors, its Non-Motorized Transportation Committee and the business directly affected by the facilities were among the major stakeholders who provided comments on this issue. One commenter provided the Project Team with suggested alternative locations and concepts for these station facilities. In response to these comments, the Project Team developed and evaluated four alternative site plans: Options A, B, C and D. Each option is summarized below and shown in Figures 1 through 4.

- Option A is essentially that of the General Plans from the Supplemental Draft EIS. It retains the location for station facilities originally evaluated in the Draft EIS. The bus bays and Kiss & Ride facilities are located at the intersection of Route 7 (Leesburg Pike) and Tyco Road, on the north/outbound side of Tyco Road, at the site of the former Templeton Oldsmobile (now HBL Porsche/Audi) automotive dealership.

  One minor refinement from Option A of the Public Hearing Report is the addition of an elevator, on the south side of Tyco Road, providing access to the station's pedestrian bridge from the south side of Tyco Road.

- Option B locates the bus bays and Kiss & Ride facilities at the south/inbound side of Tyco Road, at the intersection of Route 7 and Tyco Road, at the site of the current Peacock Buick automotive dealership.

  This option was developed to minimize changes to the station configuration, and therefore minimize changes in effects, from that presented in the Supplemental Draft EIS. This option retains the station entrance on the outbound end of the station, but responds to comments from Fairfax County and others to consider placement of the station facilities on the south side of Tyco Road. This new option also sought to minimize the number of affected properties and business displacements associated with moving the station facilities.

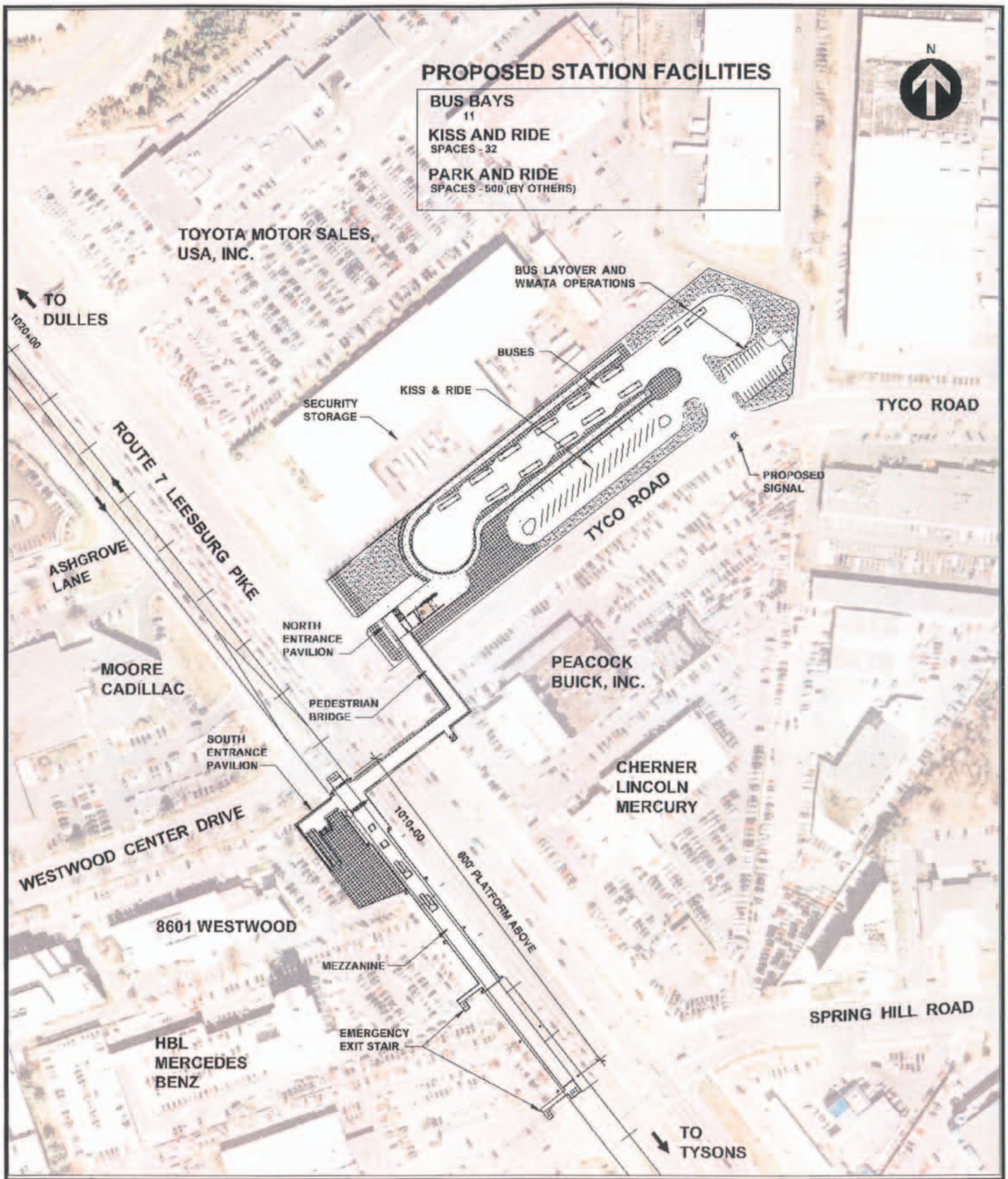


Figure 1

Tysons West Option A

Dulles Corridor Rapid Transit Project

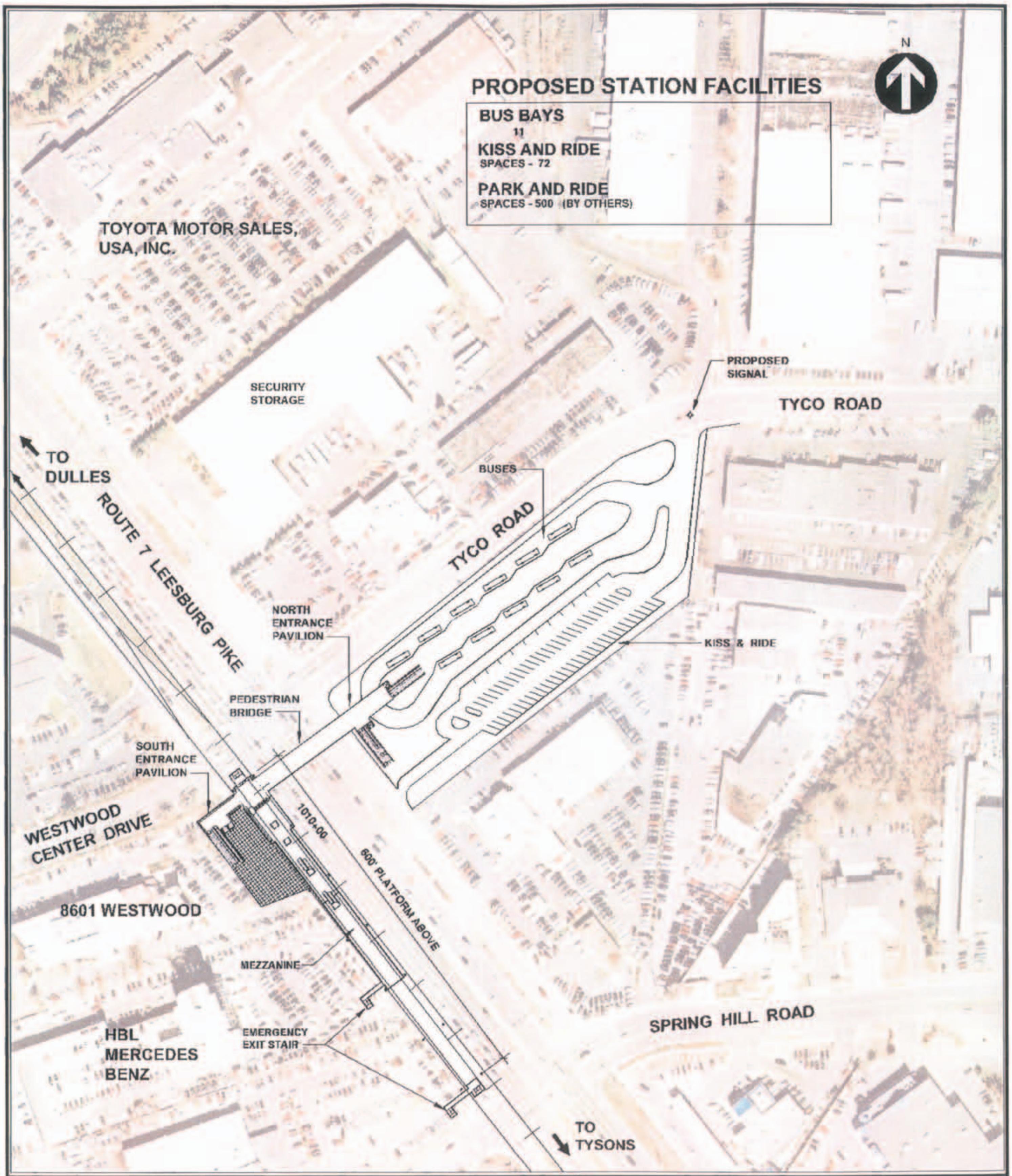


Figure 2

Tysons West Option B

Dulles Corridor Rapid Transit Project

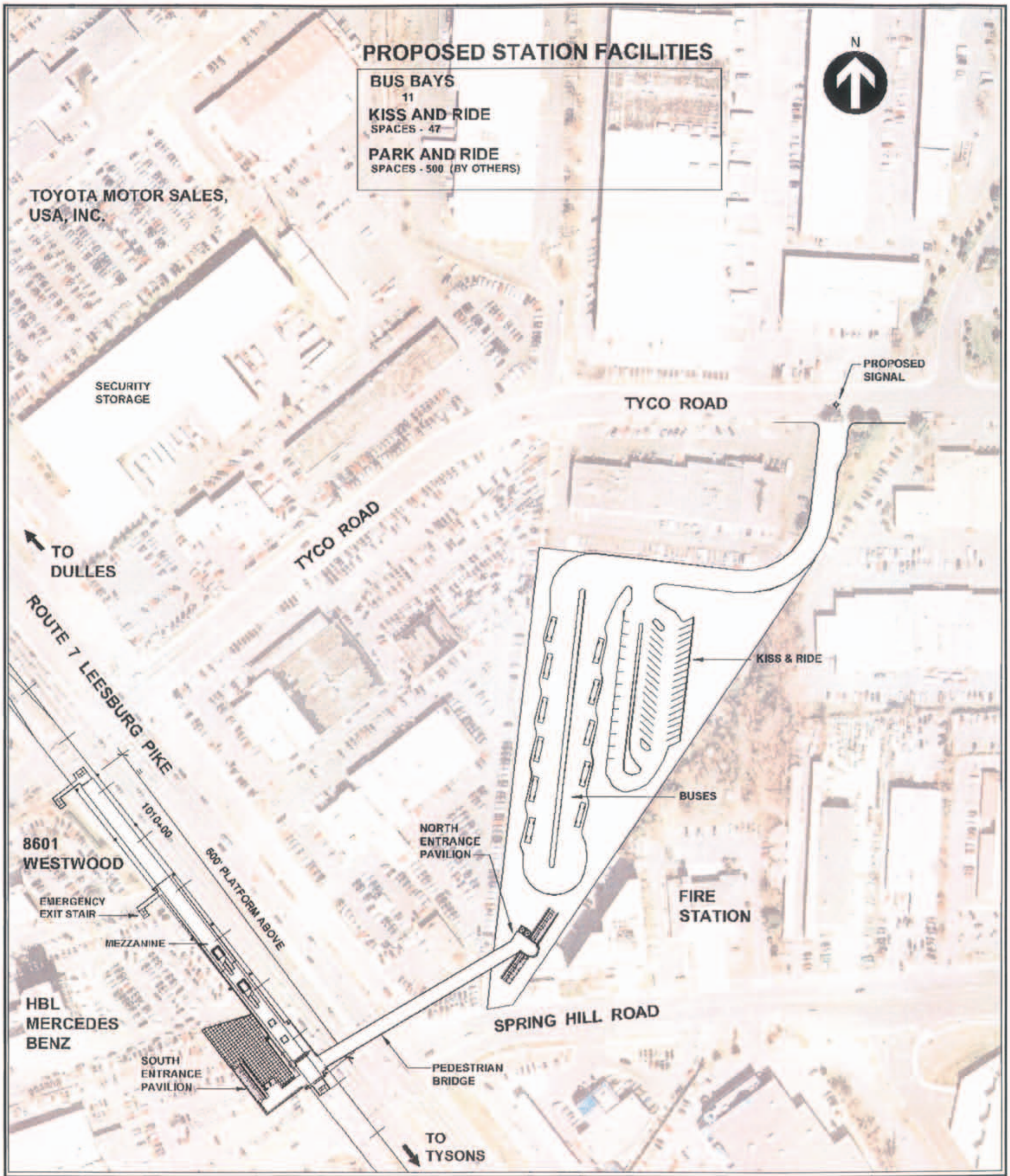


Figure 3

Tysons West Option C

Dulles Corridor Rapid Transit Project

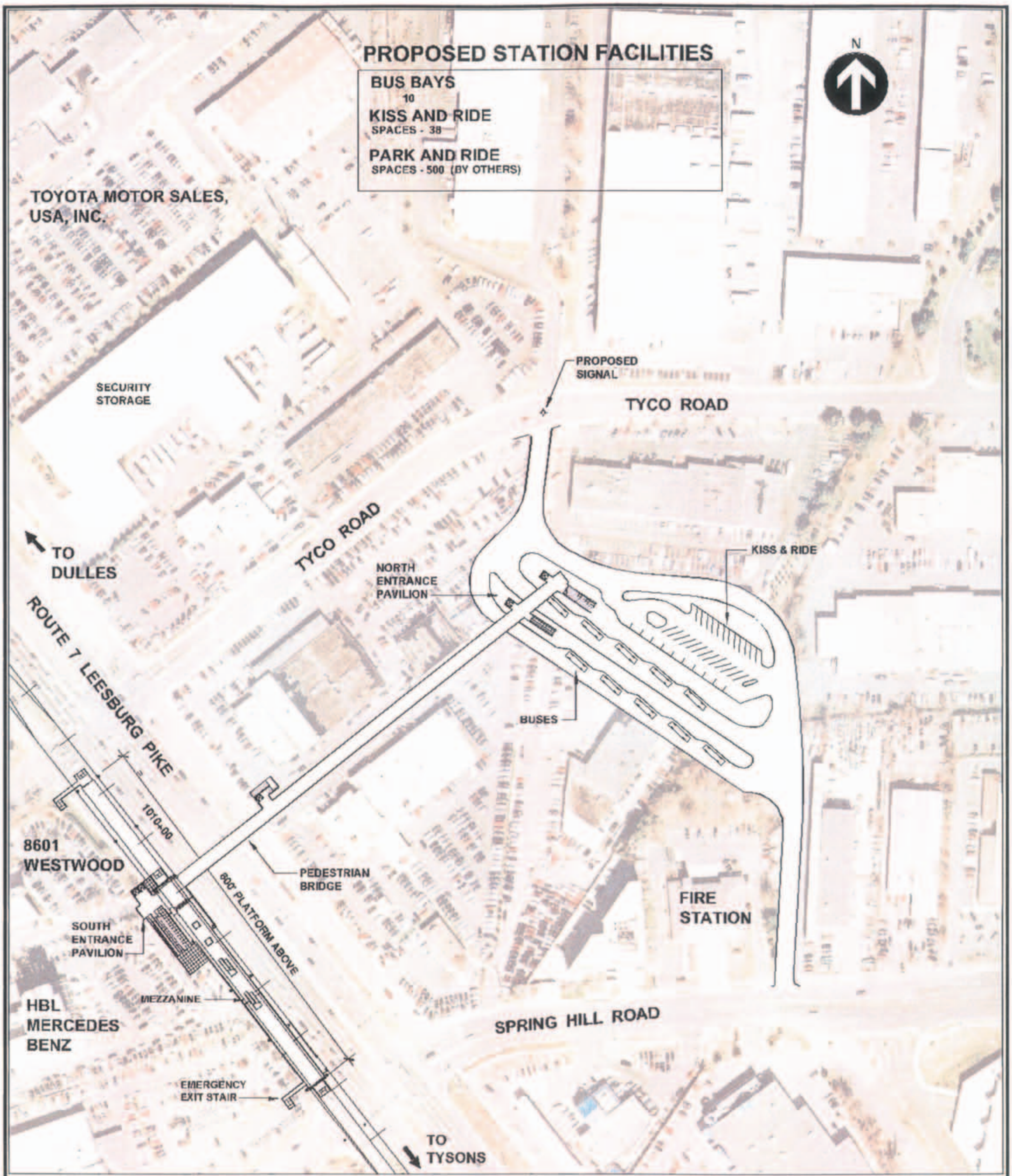


Figure 4

Tysons West Option D

Dulles Corridor Rapid Transit Project

- Option C relocates the station entrance from the outbound end of the station platform, near Tyco Road, to the inbound end, near Spring Hill Road. The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7.

  This new option was developed in response to comments from the Fairfax County Non-Motorized Transportation Committee and others suggesting that a Spring Hill Road location for the station entrance would better facilitate pedestrian and bicycle access. It was also the goal of this option to preserve Route 7 frontage for future development, and to position the bus bays and Kiss & Ride facilities to better accommodate possible joint development in support of Fairfax County's goals for Transit Oriented Development (TOD). It would require property from several parcels with different owners and increase the number of business displacements.

- Option D relocates the station entrance to the center of the station platform, at a mid-block location on Route 7, between Tyco Road and Spring Hill Road. The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7. Option D also takes advantage of currently vacant public property behind the existing Fairfax County Fire & Rescue facility (Fire & Rescue Station #29).

  This new option responds to issues raised by the potentially impacted property owners and tenants expressed in comments on the Public Hearing Report of the Supplemental Draft EIS, and during meetings held with these stakeholders. This option would require property from several parcels with different owners and increase the number of business displacements.

Although there may be other viable variants to these options, the Project Team believed that Options A through D described above adequately represented the range of reasonable alternatives. The Conference's evaluation of these options identified the issues that should be considered in the ultimate selection of the location for the station bus bays and Kiss & Ride facilities.

4.0 POST-HEARING EVALUATION

The Project Team conducted a post-hearing conference for the property owners and tenants that are directly affected by these alternative site plans. The post-hearing conference served as a mini-public hearing and followed a similar process of formal notification, conference itself, record of comments, conference report with response to comments and recommendation, its review, conference report supplement with final recommendation, and action by the Commonwealth Transportation Board (or the DRPT Director) and WMATA Board of Directors. For the conference, the Project Team notified Fairfax County and the VDOT plus those parties who have expressed interest and/or delivered comments into the public hearing record with respect to the Tysons West Station and its facilities.

4.1 Property Acquisition and Business Effects

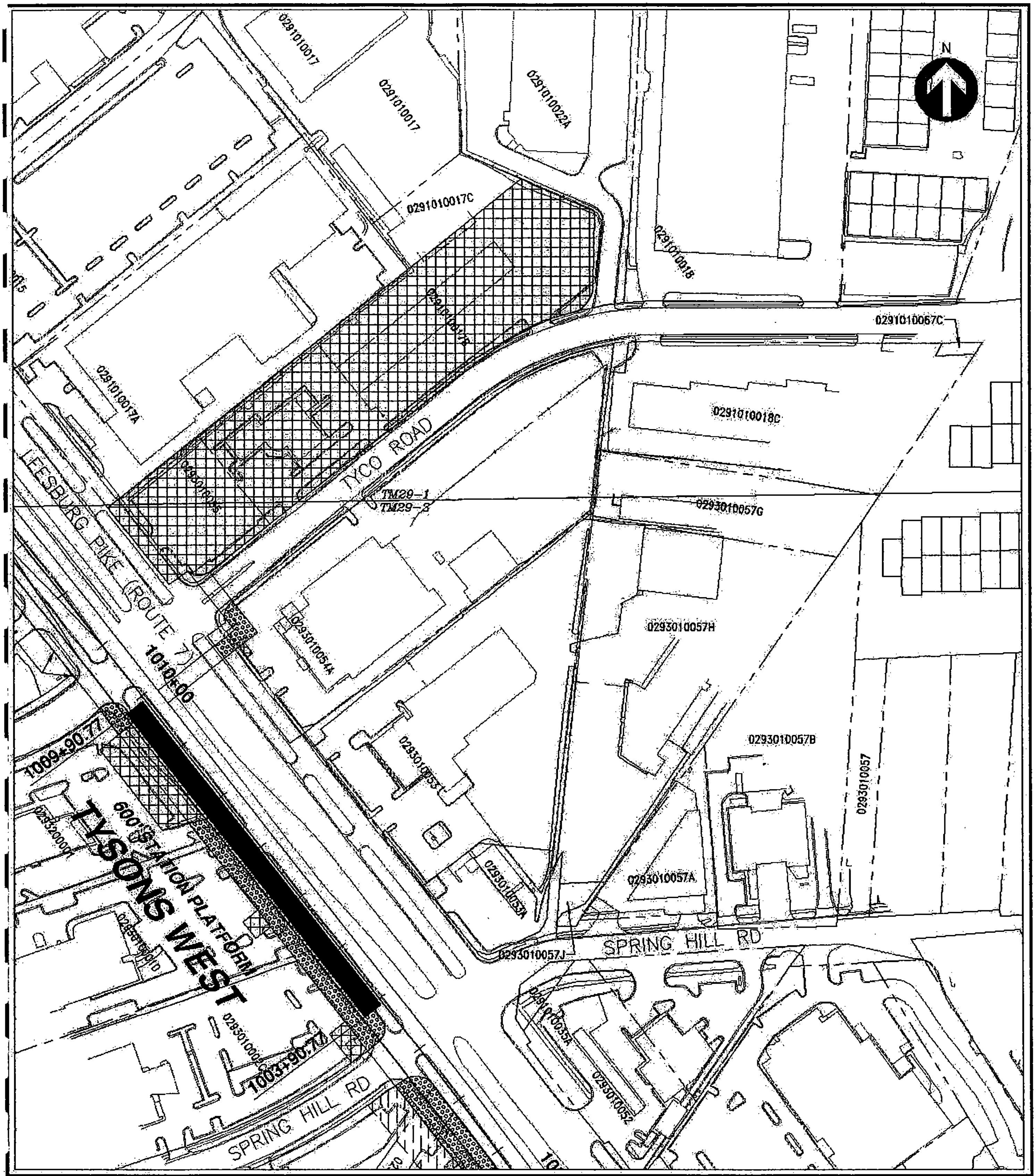
A significant Project goal is to limit, to the extent possible, business displacements and right-of-way acquisition impacts that would result from implementation of the Project. Each of the options for the Tysons West Station facilities were evaluated to determine the number of individual property owners affected, and the number of businesses displaced. The total area required for the station facilities under each option is similar (approximately 4 acres), with some minor variation to accommodate the alternative site configurations. Figures 5 through 8 are the property identification plans; these are subject to change during preliminary engineering, and final design.

Option A requires the acquisition of property (or easements) from five (5) property owners. The majority of the right-of-way required is for the bus bays and Kiss & Ride facilities on the former Templeton Oldsmobile site. This acquisition would displace the current tenant, HBL Porsche/Audi. HBL also operates other automotive dealerships in the immediate area that are adjacent to the Tysons West station. HBL's lease of the Templeton property and subsequent improvements occurred after the selection of the LPA and the identification of this site as the location for the Tysons West station facilities. Additional easements are needed from other property owners and would have some affect on their business operations. The station entrance pavilions, emergency exits, and station support structure would displace a limited number of parking spaces, and result in some alteration of on-site circulation and access for four (4) businesses.

Option B requires the acquisition of property (or easements) from four (4) property owners. The majority of the right-of-way required is for the bus bays and Kiss & Ride facilities on the site of the existing Peacock Buick automobile dealership. This acquisition would displace this automobile dealership operated by the property owner. Additional easements are needed from other property owners and would have some affect on their business operations. The station entrance pavilions, emergency exits, and station support structure would displace a limited number of parking spaces, and result in some alteration of on-site circulation and access for three (3) businesses.

Option C requires the acquisition of property (or easements) from five (5) property owners. A total of eight (8) parcels would be affected. This option shifts the station entrance to the inbound end of the station and affects new property owners in the vicinity of Spring Hill Road. Much of the property required for this option supports the Cherner Automotive Group's operations, including a Lincoln-Mercury dealership, Isuzu-Kia dealership and Cherner Collision Center. A total of six (6) businesses would be displaced, including one operated by a property owner (Cherner Collision Center). Operation of the Cherner Isuzu-Kia dealership would be affected by any required structural supports for the pedestrian bridge, and the access roadway at Tyco Road would affect businesses at 8501 Tyco Road. The station entrance pavilions, emergency exits, and station support structure would displace a limited number of parking spaces, and result in some alteration of on-site circulation and access for three (3) businesses.

Option D requires the acquisition of property (or easements) from eight (8) property owners (one being Fairfax County Board of Supervisors). A total of nine (9) parcels



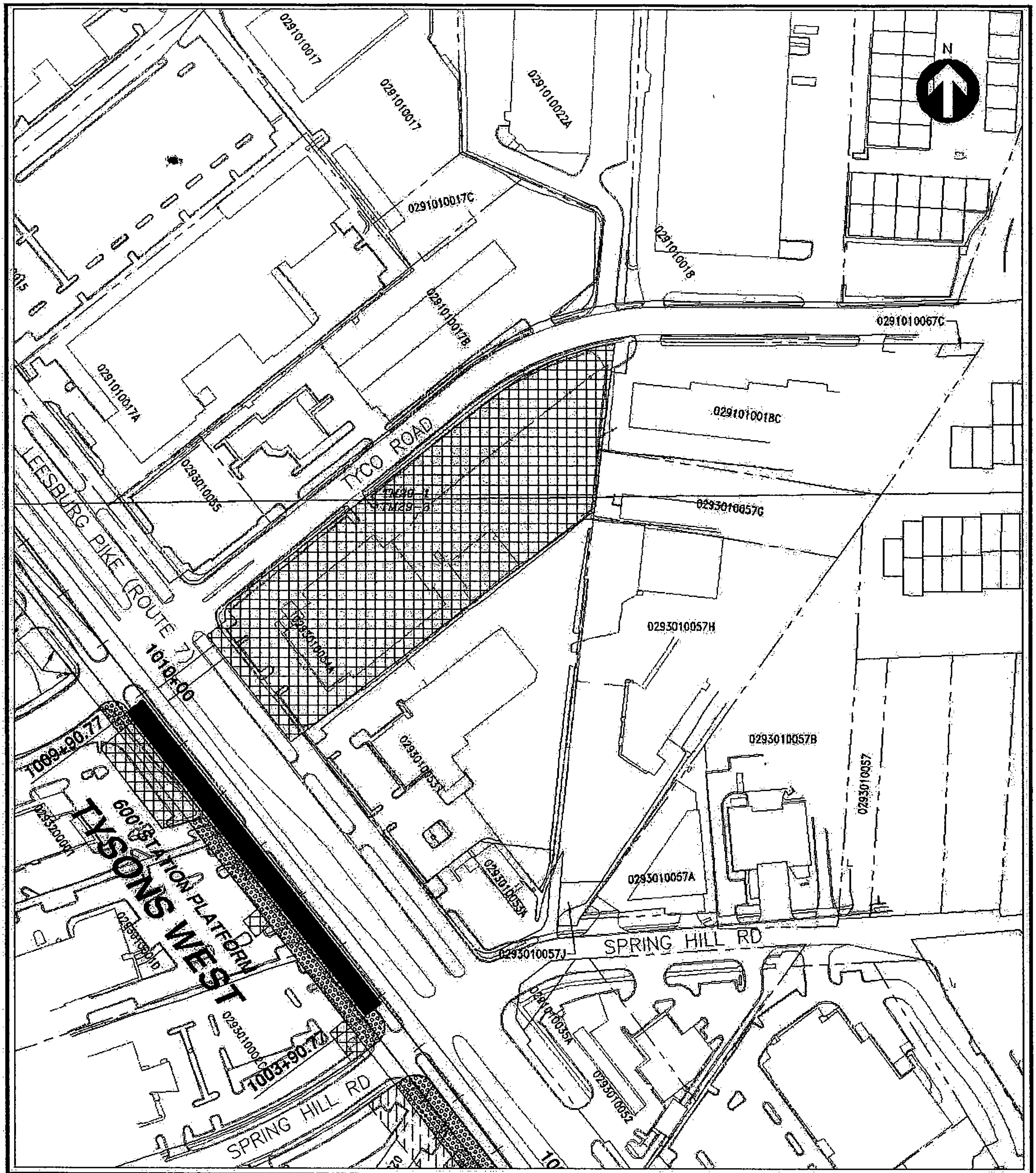
LEGEND

———	LIMIT OF RIGHT-OF-WAY
— - —	PROPERTY LINE
▩	PERMANENT SURFACE EASEMENT
▦	PERMANENT UNDERGROUND EASEMENT
▦	PERMANENT AERIAL EASEMENT
0293010071	TAX PARCEL ID NO.
TM29-3	TAX MAP SHEET NO.
▧	POTENTIAL CONTRACTOR WORK AREA

Figure 5

Tysons West Option A Property Identification Plan

Dulles Corridor Rapid Transit Project



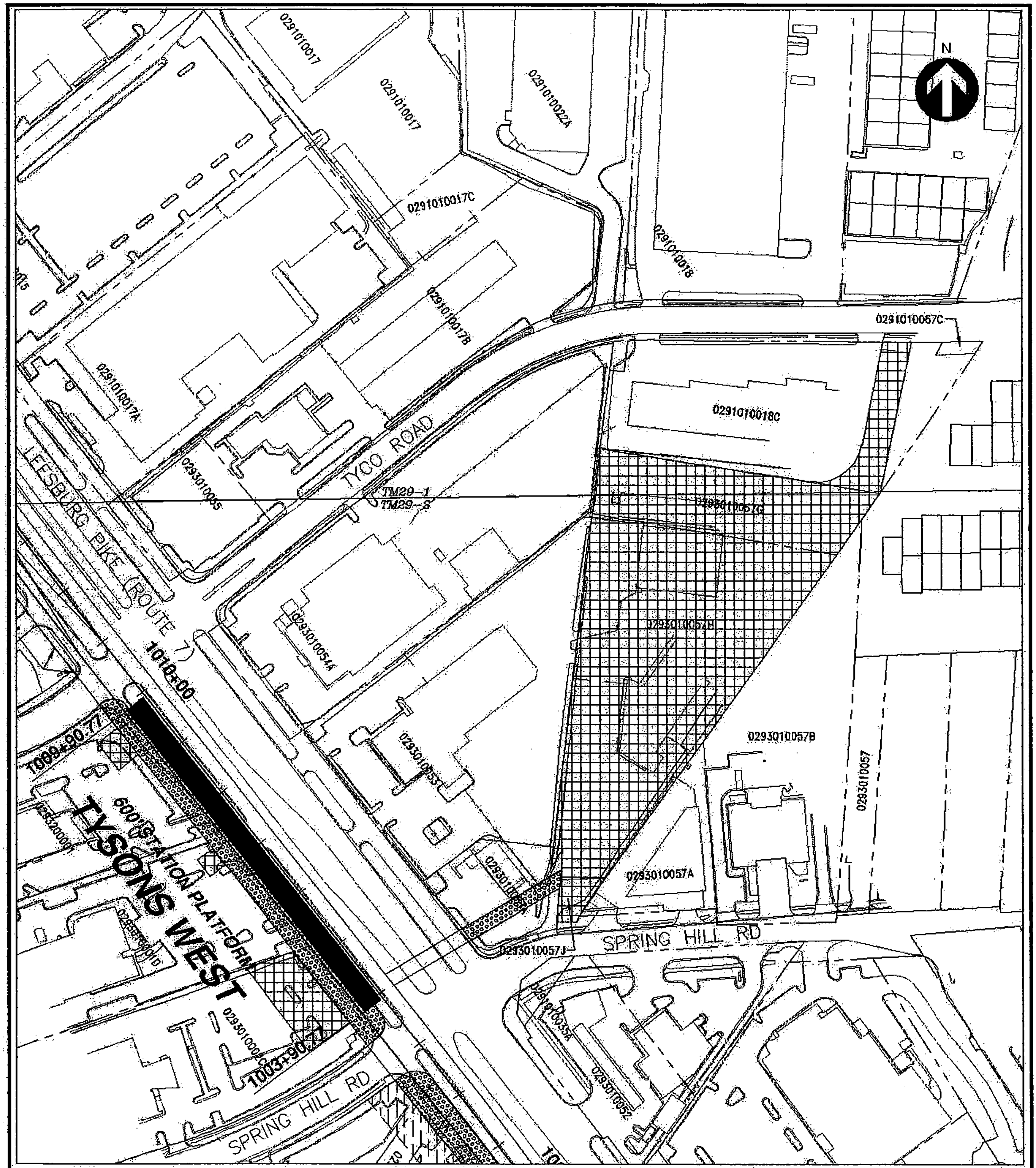
LEGEND

———	LIMIT OF RIGHT-OF-WAY
— — —	PROPERTY LINE
⊠	PERMANENT SURFACE EASEMENT
▦	PERMANENT UNDERGROUND EASEMENT
▨	PERMANENT AERIAL EASEMENT
0293010071	TAX PARCEL ID NO.
TM29-3	TAX MAP SHEET NO.
▧	POTENTIAL CONTRACTOR WORK AREA

Figure 6

Tysons West
Option B
Property Identification Plan

Dulles Corridor
Rapid Transit Project



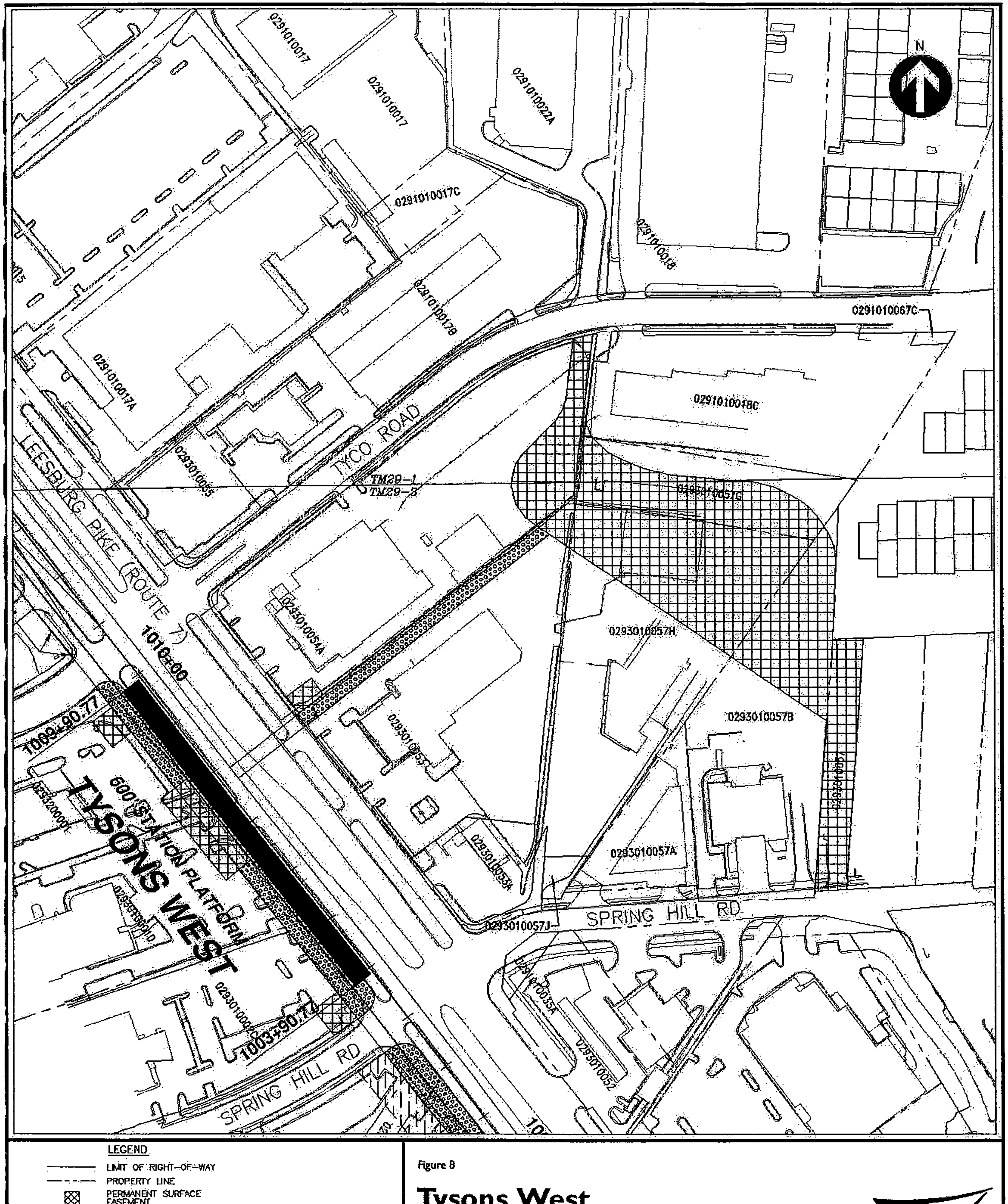
LEGEND

────	LIMIT OF RIGHT-OF-WAY
— - - —	PROPERTY LINE
⊠	PERMANENT SURFACE EASEMENT
▦	PERMANENT UNDERGROUND EASEMENT
▦	PERMANENT AERIAL EASEMENT
0293010071	TAX PARCEL ID NO.
TM29-3	TAX MAP SHEET NO.
▨	POTENTIAL CONTRACTOR WORK AREA

Figure 7

Tysons West
Option C
Property Identification Plan

Dulles Corridor
Rapid Transit Project



	LEGEND
———	LIMIT OF RIGHT-OF-WAY
—-·-—	PROPERTY LINE
⊠	PERMANENT SURFACE EASEMENT
▦	PERMANENT UNDERGROUND EASEMENT
▩	PERMANENT AERIAL EASEMENT
0293010071	TAX PARCEL ID NO.
TM29-3	TAX MAP SHEET NO.
▨	POTENTIAL CONTRACTOR WORK AREA

Figure 8

Tysons West
Option D
Property Identification Plan

Dulles Corridor
Rapid Transit Project

would be affected. This option shifts the station entrance to the center of the platform and would relocate the entrance pavilion to the front of the HBL Mercedes-Benz dealership. The pedestrian walkway and sidewalk to the station facilities on the north side of Route 7 would be located between the existing Peacock Buick and Cherner Lincoln Mercury dealerships. This option would displace between five (5) to seven (7) businesses, including McLean Self-Storage, and affect automobile dealerships operated by two of the property owners, as well as the Cherner Collision Center. The effects on existing businesses of Option C that were identified in the review comments on the Public Hearing Report are diminished under Option D. Specifically, the parcel occupied by the East-West Mortgage building would not be isolated from adjacent parcels under the same ownership, the displacement of vehicle storage and repair facilities are reduced. The station entrance pavilions, emergency exits, and station support structure would displace a limited number of parking spaces, and result in some alteration of on-site circulation and access for four (4) businesses.

4.2 Vehicular Access

In general, existing and projected baseline traffic conditions in the station area are heavily congested during peak hours. For this reason, the LPA had been revised to reduce total Park-and-Ride capacity at the station to 500 spaces. Overall, the additional traffic volumes attributable to Metrorail operations and the Tysons West Station bus bays and Kiss & Ride facilities are insignificant in comparison to background traffic. However, the effects of this background traffic on access to the station facilities are potentially significant.

Option A is accessed from Tyco Road, with its entrance approximately 820 feet from the Route 7/Tyco Road intersection. Bus and Kiss & Ride access would share a common entrance, and merge before exiting. No turning lanes are envisioned on Tyco Road at the entrance to the station facilities. The vehicle entrance may be too close to the intersection of Route 7/Tyco Road to gain approvals for installation of a traffic signal, particularly when queue lengths at this intersection are considered. Without signalization, bus and Kiss & Ride traffic making a left exiting the station facilities may face delays. Within the site there is limited space to accommodate the merging of bus and Kiss & Ride traffic on exiting, and limited lines of sight, which may cause congestion. Circulation clearances within the site are limited to minimum requirements due to the constraints of the parcel's width.

Option B has its primary vehicular entrance at approximately the same distance from the Route 7/Tyco Road intersection as Option A. Bus and Kiss & Ride access would share a common entrance, and merge before exiting. However, Option B would also have a limited access right-in only entrance from the Route 7 north side service road that would enhance Kiss & Ride circulation. No turning lanes are envisioned on Tyco Road at the entrance to the station facilities. The primary vehicle entrance may be too close to the intersection of Route 7/Tyco Road to gain approvals for installation of a traffic signal, particularly when queue lengths at this intersection are considered. Without signalization, bus and Kiss & Ride traffic making a left entering the station facilities may face delays. Within the site there is adequate space to accommodate the merging of bus and Kiss & Ride traffic on exiting, and reasonable lines of sight. Circulation clearances within the site are not limited by constraints of the parcel width.

Option C has its vehicle entrance on Tyco Road, approximately 1,300 feet from Route 7/Tyco Road intersection. This greater distance from the Route 7/Tyco Road intersection than Options A & B would make signalization more likely to be approved. Signalization would support improved and orderly access to station bus bays and Kiss & Ride facilities. Within the site there is adequate space to accommodate a dedicated lane for bus circulation to facilitate the flow of bus and Kiss & Ride traffic. Circulation clearances within the site are not limited by constraints of the parcel width.

Option D has vehicle access from both Tyco Road and Spring Hill Road, allowing for a right-in, right-out loop for vehicles coming from and returning to the core of Tysons Corner. The entrance on Tyco Road is located approximately 820 feet from Route 7/Tyco Road intersection; the Spring Hill Road entrance is located approximately 630 feet from Route 7/Spring Hill Road intersection. The Tyco Road entrance may be too close to the intersection of Route 7/Tyco Road to gain approvals for installation of a traffic signal, particularly when queue lengths at this intersection are considered. Without signalization, bus and Kiss & Ride traffic making a left entering the station facilities may face delays. This other entrance is most likely too close to the intersection of Route 7/Spring Hill Road to gain approval for installation of a traffic signal. But the right-in, right-out loop for vehicles would help mitigate any effects from the absence of a traffic signal. Within the site there is adequate space to accommodate the merging of bus and Kiss & Ride traffic on exiting, and reasonable lines of sight. Circulation clearances within the site are not limited by constraints of the parcel width.

4.3 Pedestrian and Bicycle Access

The Project Team strongly believes that pedestrian and bicycle access to the stations in Tysons Corner will play a major role in their ultimate success. While the extent of pedestrian and bicycle access improvements by the Project will in general be limited to the immediate area of the stations and the station facilities, the Project will continue to coordinate with VDOT, Fairfax County, its Non-Motorized Transportation Committee, and other stakeholders to ensure best fit with existing and planned Tysons Corner development and regional facilities. Recently, Fairfax County identified its intent to develop comprehensive station area plans for each station to guide land use and infrastructure improvement decisions. The Virginia Department of Transportation, in coordination with Fairfax County, also updated its inventory of sidewalks and trails with emphasis on missing segments in the vicinity of the Project's stations.

Option A, as presented in this Technical Memorandum, would provide grade separated pedestrian and bicycle access to the station from both the north and south sides of Tyco Road, and from both the east and west sides of Route 7. Comments contained in the Public Hearing Report suggest that Option A places the station entrance more remote from existing residential development than would an entrance located at, or near, Spring Hill Road. However, future transit oriented development in close proximity to the station, which would generate a higher percentage of walk/bicycle arrivals, is likely to be more evenly distributed around the station.

Option B would provide grade separated pedestrian and bicycle access to the station from the south side of Tyco Road, and from both the east and west sides of Route 7.

Option C would provide grade separated pedestrian and bicycle access to the station from the north side of Spring Hill Road, and from both the east and west sides of Route 7. Additionally, the entrance road from Tyco Road would provide another pedestrian/bicycle access route to the station. Comments contained in the Public Hearing Report suggest that Option C would place the station entrance closer to existing residential development than would an entrance located at, or near, Tyco Road. However, future transit oriented development in close proximity to the station, which would generate a higher percentage of walk/bicycle arrivals, is likely to be more evenly distributed around the station.

Option D would provide grade separated pedestrian and bicycle access to the station from both the east and west sides of Route 7. Additionally, the entrance roads from Tyco Road and Spring Hill Road respectively, would provide alternative pedestrian/bicycle access routes to the station.

4.4 Transit Customer Convenience and Safety

WMATA has a ranking (in descending order) of priorities for access and proximity to a station: pedestrian and bicycle/accessible route, transit buses, Kiss & Ride (and motorcycles), high occupancy vehicles, and park-and-ride. Safe pedestrian access to Metro stations is the highest priority in site planning. Adequate circulation routes must be provided, with emphasis on avoiding pedestrian/vehicular conflicts. Each of the options was assessed using these criteria.

Option A would provide for bus and Kiss & Ride internal re-circulation, separation of pedestrian and vehicular circulation, and would provide for reasonably direct access from the station facilities to the station entrance. Some bus bays would be facing away from the station entrance rather than facing the station entrance, the latter being preferable.

Option B would provide for bus and Kiss & Ride re-circulation, separation of pedestrian and vehicular circulation, and would provide for direct access from the station facilities to the station entrance. Some bus bays would be facing away from the station entrance rather than facing the station entrance, the latter being preferable. Buses would off-load to a common island, which is more clear for the infrequent user, and would facilitate bus-to-bus transfers (though this is not a planned bus operating assumption).

Option C would provide for bus and Kiss & Ride re-circulation, separation of pedestrian and vehicular circulation, and would provide for reasonably direct access from the station facilities to the station entrance. Some bus bays would be facing away from the station entrance rather than facing the station entrance, the latter being preferable.

Option D would provide for bus and Kiss & Ride re-circulation and separation of pedestrian and vehicular circulation. The pedestrian bridge would be quite long, and the walking distance from the buses and Kiss & Ride spaces would be at the outer limit of acceptability. Bus bays would all be facing towards the station entrance, but only 10 bays are accommodated rather than the 11 accommodated by other options. This reduction in the number of bays would require multiple routes to be assigned to a given bay, and may result in service impacts.

4.5 Ability to Accommodate Joint Development

One of the key goals and objectives that have guided the Project's planning and design has been support of future development. The Project Team evaluated how each of the four options might physically accommodate joint development above the station facilities. For reference, the Project Team recommended that 500 park-and-ride spaces for use by Metrorail customers be incorporated into the redevelopment of parcels in the vicinity of the station. The Project would compensate the participating developer for land and construction of the park-and-ride.

Option A has a limited parcel width that would preclude accommodation of a conventional building grid without compromising the bus and Kiss & Ride facilities. A pending zoning application for redevelopment of the former Security Moving and Storage site immediately to the north would further limit the viability of joint development on this site.

Option B could accommodate a conventional building grid; however, it would require the cooperation of the adjacent landowner to establish a reasonable footprint for development.

Option C could accommodate a conventional building grid; the incorporation of the adjacent Fairfax County parcel would provide a reasonable footprint for development.

Option D could accommodate a conventional building grid; however, it would require the cooperation of an adjacent landowner to establish a reasonable footprint for development.

4.6 Support of Transit Oriented Development

One of the key goals and objectives that have guided the Project's planning and design has been support of future development. The Project Team evaluated how future development might relate and connect to the station and its facilities. The difference between joint development and transit oriented development (TOD) is location: joint development is above the station facilities and should be transit oriented. TOD is around the station and may also encompass the station facilities.

Fairfax County itself has made substantial progress in promoting transit supportive land use within the Dulles Corridor. The Fairfax County comprehensive plan and zoning ordinance has been revised to encourage and support the transit-oriented development in both Tysons Corner and Reston. Changes in both land uses and densities in the vicinity of new rail stations will be triggered by the Project's construction. Fairfax County's zoning ordinance now includes land use classifications such as Transit Station Areas (TSAs) that allow extremely dense, mixed-use, and transit-oriented development. As a result of these steps, major mixed-use developments have been proposed at the locations of planned Phase 1 rail stations in Tysons Corner and Reston, as well as future full LPA stations in Reston, Herndon, and Loudoun County. In this context, Fairfax County submitted the following comment into the public hearing record:

> *At the Tysons West Station, consideration should be given to locating the parking facility and pedestrian access on the south side of Tyco Road. Locating the parking structure on the south side of Tyco Road may be more favorable to joint development. Locating pedestrian access on the south side of Tyco Road may serve a greater number of pedestrians.*

Option A would allow for direct connection to future development via the Project's pedestrian bridge and elevator at the south side of Tyco Road. Limits to joint development discussed above would suggest that the site of the station bus and Kiss & Ride facilities would remain at a low level of development intensity for the foreseeable future. Additionally, there is little opportunity to accommodate future development of street level commercial frontage due to the location of the Kiss & Ride facilities.

Option B would allow for direct connection to future development at the south side of Tyco Road. There is little opportunity to accommodate future development of street level commercial frontage due to the location of the bus facilities.

Option C would allow for intense mixed-use development immediately adjacent to the station by preserving significant frontage on Route 7 and by placing the bus & Kiss & Ride facilities internal to the block.

Option D would allow for intense mixed-use development immediately adjacent to the station by preserving significant frontage on Route 7 and by placing the bus & Kiss & Ride facilities internal to the block. The mid-block location of the pedestrian bridge would allow for direct connections to future development at either side of the bridge. The bridge could also be accessed by an extension to future development to the north.

4.7 Capital Costs

The Project Team did not consider the capital costs of these alternative site plans as a determinant in this evaluation. Capital costs include right-of-way, site preparation, construction, engineering and administration, insurance and contingency. The Team anticipates that potentially lower right-of-way acquisition costs for some options are likely to be offset by additional business relocation costs and the increased costs of the station facilities for those options. The six measures outlined above address the key factors that are typically considered when assessing different station facility site plans and allow for a comparative evaluation among the alternative site plans considered.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The Project Team recommends an Option E for the Tysons West entrance and station facilities for evaluation in the Final EIS. Option E is a viable variant of Option C and is depicted in Figure 9 and 10. Like Option C, Option E has its station entrance at the inbound, east end of the station near Spring Hill Road.

The entrance pavilion at the southside of the station is in the front part of the property currently leased by Rosenthal Honda. The station will have its stair towers for emergency exits on property currently leased by HBL Mercedes-Benz and by HBL Pre-Owned Cars. The station support columns will be upon all three properties. The entrance pavilion, emergency exit stair towers and support columns will displace a limited number of parking spaces and result in alteration of on-site circulation and access for all three businesses.

The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7. Since the conference, the Project Team convened to reconsider the program requirements of bus bays. The Team reviewed the time between bus departures in the evening peak hour to discern if there might be use of bays by more than one bus route. Thus, by allowing buses to share the same bay, the Team reduced the number of bus bays from ten (eleven in some options) to eight. Unlike other options, the Kiss & Ride fully utilizes the undeveloped County land to the rear of Fire and Rescue Station No. 29. In combination, these two changes allow Option E to have reduced property requirements and fewer business effects.

Option E's initial access at Tyco Road is similar to Option C and would be for access to station facilities only. This roadway and the station facilities would be operated and maintained by WMATA. In response to expressions of interest in having a second access point to the station facilities and in an initiation of a street grid in this area of Tysons Corner, Option E includes a possible, later connection to Spring Hill Road. That connection cannot be advanced at this time due to its proximity to the driveways of Fire Station No. 29.

As summarized in the text and Table 1 below, the Project Team recommends Option E at Tysons West Station because it would:

- Offer high transit customer convenience and safety and thus best serve the mobility goals of the Project.

- Better facilitate pedestrian and bicycle access, as urged by the Fairfax County Non-Motorized Transportation Committee, the McLean Citizens Association and others.

- Preserve Route 7 frontage for future redevelopment.

- Position the bus bays and Kiss & Ride facilities to better accommodate possible joint development in support of Fairfax County's goals for Transit Oriented Development (TOD) in and around transit stations.

- Allow the future construction of the roadway connection to Spring Hill Road for improved vehicular access.

- Place the access point on Tyco Road at the farthest point possible in order to lessen the effects on the Route 7 intersection.

- Reduce the effects upon the Cherner Automotive Group's operations and avoid the displacement of the business tenants of RMC TYCO, LLC.

- Reduce the property requirements and locate the facilities to improve the potential for redevelopment of surrounding parcels.

However, the current access to a portion of Cherner's existing automotive operations from Spring Hill Road would be closed by Option E, as it was by Option C. Alternative access to the property would be developed in coordination with the property owner during preliminary engineering. DRPT would also continue discussions with the property owner about the most appropriate mechanism for conveying any property needed for the Project.

Table 1: Comparison of Alternative Site Plans for Tysons West Station

Evaluation Criteria	**Option**				
	A	**B**	**C**	**D**	**E**
Access Points	One	One +	One	Two	One +
Property Acquisition and Business Effects	●	●	◐	○	●
Vehicular Access	○	◐	◐	●	◐
Pedestrian and Bicycle Access	○	◐	◐	◐	◐
Transit Customer Convenience and Safety	◐	●	●	○	●
Ability to Accommodate Joint Development	○	◐	●	●	◐
Support of Transit Oriented Development	○	○	●	●	●

Note: With the potential future Spring Hill Road access roadway, Option E would have improved vehicular, pedestrian, and bicycle access.

Legend:		
	●	Good
	◐	Fair
	○	Marginal

Appendix E

- Comparison of Draft EIS Baseline and Final EIS No Build

Comparison of Draft EIS Baseline and Final EIS No Build Alternatives

General Notes:

The Baseline Alternative presented in the Draft EIS is the equivalent of the no-build condition for the Dulles Corridor Rapid Transit Project.

The No-Build Alternative for the Final EIS is an updated version of the Draft EIS Baseline, which reflects current assumptions about planned improvements.

Category	Draft EIS Baseline	Final EIS No Build
Basic Transit Network Elements		
Metrorail	Existing 103-mile system Planned Improvements ▪ Blue Line extension to Largo Town Center ▪ New Red Line station at New York Avenue ▪ New Metrorail/VRE station at Potomac Yard ▪ Modify Orange Line Supplemental service to operate in both directions between West Falls Church and Stadium-Armory stations during the peak period	Same as Draft EIS Baseline, except: Orange Line Supplemental service would operate between West Falls Church and New Carrollton stations, and between Vienna and New Carrollton stations.
Corridor Express Bus	None	None
Local Bus	Existing Service Fairfax Connector: Express, feeder, local circulator Loudoun County: Express WMATA: Regional, with some circulation Planned Improvements ▪ New Bus Access Slip Ramps (3 pairs) ▪ Improved Fairfax County express service, and associated circulator improvements ▪ Expanded Loudoun County express service, and new circulator and feeder services	Existing Service Fairfax Connector: Express, feeder, local circulator Loudoun County: Express, reverse, local circulator WMATA: Regional, with some circulation ▪ New Bus Access Slip Ramps (3 pairs) ▪ Improved Fairfax County express service, and associated circulator improvements ▪ New Loudoun County express service, and new local circulator services Planned Improvements ▪ Minor modifications to Fairfax and WMATA services ▪ Frequency improvements and addition of more local circulator service in Loudoun County

Comparison of Draft EIS Baseline and Final EIS No Build Alternatives

Category	Draft EIS Baseline	Final EIS No Build
Operating Plan (weekdays)		
Metrorail		
▪ Car Consists	Peak: 8 cars Orange, Blue lines 6, 8 cars Orange Supplemental (mix) 6 cars Red-Glenmont, Green, Yellow 4 cars Red-Silver Spring Base: 4, 6 cars Orange, Red-Silver Spring (mix) 4 cars Blue, Red-Glenmont, Green, Yellow	Same as Draft EIS Baseline, with potential adjustments after equilibration for Final EIS
▪ Headways	Peak: 6 minutes Orange, Blue, Orange Supplemental 4 minutes Red, Green, Yellow Base: 12 minutes Orange, Blue 8 minutes Red, Green, Yellow	Peak: 7 minutes Orange, Blue, Orange Supplemental 4 minutes Red, Green, Yellow Base: 12 minutes Orange, Blue 8 minutes Red, Green, Yellow
▪ Span of Service	Early AM: 5:30 – 6:00 a.m. AM Peak: 6:00 – 9:15 a.m. Midday: 9:15 a.m. – 3:00 p.m. PM Peak: 3:00 – 6:15 p.m. Evening: 6:15 – midnight (2:00 a.m. Friday)	Same as Draft EIS Baseline
Local Bus	Same as existing service, with minor modifications as outlined in the Transit Operations and Maintenance Plan	Same as Draft EIS Baseline, with modifications to reflect adjustments to existing Loudoun, WMATA service

Comparison of Draft EIS Baseline and Final EIS No Build Alternatives

Category	Draft EIS Baseline	Final EIS No Build
Park-and-Rides		
Parking Spaces	West Falls Church: 1,037 spaces 275 spaces (overflow) Reston East: 827 spaces (2,300 spaces by 2010) Herndon-Monroe: 1,745 spaces Dulles North: 750 spaces	Same as Draft EIS Baseline
Bus Bays	West Falls Church: 8 bays (south) 7 bays (north) Tysons Corner: 4 bays (mall) 10 bays (TWP transit station) Reston East: 8 bays Reston Town Center 2 bays Herndon-Monroe: 8 bays Dulles North: 6 bays	Same as Draft EIS Baseline
Highway Network		
Major Roadways	Existing highway network Planned improvements as follows: ▪ I-495 2010: Capacity improvements including HOV lanes and direct HOV access ramp at Route 123 ▪ Dulles Toll Road 2005: Interchange improvements at Hunter Mill Rd and Spring Hill Rd	Additions in **bold** ▪ I-495 Same as Draft EIS Baseline **2010: Interchange improvements at Dulles Toll Road** ▪ Dulles Toll Road Same as Draft EIS Baseline

Comparison of Draft EIS Baseline and Final EIS No Build Alternatives

Category	Draft EIS Baseline	Final EIS No Build
Highway Network		
Major Roadways	▪ DIAAH	▪ DIAAH
	2003: add 3 pairs of bus-only slip ramps between DIAAH and Dulles Toll Rd	COMPLETE
	After 2010: Third lane in each direction	Same as Draft EIS Baseline
	▪ Dulles Greenway	▪ Dulles Greenway
	2003: Third westbound lane between 772 and mainline toll plaza	COMPLETE
		2004: New interchanges at Rt 653 and Rt 654
		After 2015: Widen to 6 lanes between 901 and 7/15 Bypass
	▪ Route 7	▪ Route 7
	2010: Widen from 6 to 8 lanes, Tysons Corner; widen from 4 to 6 lanes, Toll Rd to Rolling Holly Dr	Same as Draft EIS Baseline
	2010: Grade separated interchanges at Westpark Dr and International Dr.	NOT INCLUDED
	▪ Route 123	▪ Route 123
	2010: Widen to 6–8 lanes, Rt 7 to I-495	Same as Draft EIS Baseline
	2010: Widen from 4 to 6 lanes, I-495 to Dulles Connector Rd	COMPLETE
	2010: Grade separated interchange at International Dr (not in CLRP or other plans)	NOT INCLUDED
	2010: Widening plans at Rt 7 interchange	NOT INCLUDED

Comparison of Draft EIS Baseline and Final EIS No Build Alternatives

Category	Draft EIS Baseline	Final EIS No Build
Highway Network (continued)		
	- Fairfax County Parkway 2010: Widen from 4 to 6 lanes, I-66 to Sunrise Valley Dr	- Fairfax County Parkway Same as Draft EIS Baseline
	- Route 28 2010: Widen to 8 – 10 lanes from US 29 to Rt 7, conversion of at-grade intersections to interchanges	- Route 28 CHANGE: Widen to 8 lanes from I-66 to Route 7 **By 2006: New grade-separated interchanges at Sterling Blvd, Rt 606, NASM, McLearen Rd, and Westfields Blvd**
	- Route 50 2020: Widen from 4 to 6 lanes, Fairfax/Loudoun border to Old Lee Rd	- Route 50 DO NOT INCLUDE
	- Loudoun County Parkway 2020: Complete road, Dulles Greenway to Rt 7; widen to 4–6 lanes	- Loudoun County Parkway Same as Draft EIS Baseline **By 2025: Extend road south from Greenway to I-66 and Rt 234**
	- Spring Hill Road 2005: Widen to 4 lanes, entire length of road	- Spring Hill Road CHANGE: Only widen from Rt 7 to International Dr
	- Monroe Street 2010: Widen to 6 lanes, Sunrise Valley Dr to Herndon Parkway	- Monroe Street DO NOT INCLUDE
	- Centreville Road/Elden Street 2010: Widen from 4 to 6 lanes, Worldgate to Herndon Pkwy	- Centreville Road/Elden Street Same as Draft EIS Baseline **By 2015: Widen to 6 lanes between Fairfax County Pkwy and Herndon Pkwy (East)**
	- Route 789 2010: Widen to 4 lanes; extend north to Ashburn	- Route 789 DO NOT INCLUDE

Comparison of Draft EIS Baseline and Final EIS No Build Alternatives

Category	Draft EIS Baseline	Final EIS No Build
Toll Structure		
	Dulles Toll Road: $0.25 – 0.85 for passenger vehicles (set to expire 2016)	Same as Draft EIS Baseline
Transit Fare Structure		
Metrorail	Peak: $1.10 minimum (0 to 3 miles) $3.25 maximum (16+ miles) Base: $1.10 minimum (0 to 7 miles) $2.10 maximum (10+ miles)	Peak: $1.20 minimum (0 to 3 miles) $3.60 maximum (16+ miles) Base: $1.20 minimum (0 to 7 miles) $2.20 maximum (10+ miles)
Local Bus	Depends on service provider Regular: $0.25 – $1.10 Express: $1.15 – $5.00	Same as Draft EIS Baseline
Capital Costs of Full LPA		
Year of Expenditure	$3,101.3 million	$3,460.1 million
Operating Costs of Full LPA		
Average Annual Incremental O&M Costs 2025	$179.4 million	$117.9 million

Appendix F

- Final Team Recommendations

Attachment A

FINAL RECOMMENDATIONS OF THE PROJECT TEAM DULLES CORRIDOR RAPID TRANSIT PROJECT

The Project Team, comprised of staff from DRPT and WMATA, is recommending revisions to the Locally Preferred Alternative (LPA), based on: 1) the analysis in the *Supplemental Draft Environmental Impact Statement* (October 2003), which includes the Proposed General Plans-Revisions, and 2) the comments received during the public hearing process and during the review period of the *Public Hearings Report* (February 2004). Once approved by the Commonwealth Transportation Board and the WMATA Board of Directors, these recommended revisions will become changes and additions to the *Draft Environmental Statement* (June 2002), which includes the Proposed General Plans, and will be incorporated into the Final Environmental Impact Statement (Final EIS) and General Plans.

The Project Team is responsible for implementing the approved revisions and continuing coordination with the Federal Transit Administration (FTA) as the lead federal agency for the Project, Federal Aviation Administration (FAA) as a cooperating federal agency, U.S. National Park Service, Transportation Security Administration (TSA), Virginia Department of Transportation (VDOT), Metropolitan Washington Airports Authority (MWAA), Fairfax County, Loudoun County, Town of Herndon, City of Falls Church, and other Project stakeholders.

These recommended revisions will serve to define the following:

- Full LPA and LPA Phase 1 for documentation in the Final EIS,
- LPA Phase 1 for the Project's evaluation in the Federal Transit Administration's New Starts process, and
- Amendment to the WMATA Adopted Regional System, as documented by the General Plans.

More than 830 comments from over 130 parties were received into the public hearing record prior to its close on December 29, 2003. As described in Chapter 6.0 of the *Public Hearings Report*, the general consensus among elected officials, public agencies, and the general public, including property owners, community groups, civic associations, and businesses, is that Metrorail should be ultimately extended for the full length of the Dulles Corridor from the existing Orange Line through Tysons Corner to Route 772 in Loudoun County.

The final recommendations of the Project Team are outlined in Table A-1. More detailed information regarding these recommendations is included in the remainder of this Attachment. Recommended mitigation plans, continuing coordination, and unresolved issues are also discussed.

Table A-1: Final Recommendations of the Project Team

Decision Point	***Final Recommendations***	**Capital Costs**[1] (Year of Expenditure $)
Locally Preferred Alternative		
LPA Phase 1 to Wiehle Avenue: Opening Year – 2009	***Metrorail Alternative with Alignment T6 in Tysons Corner***	$1.5 billion
Full LPA to Route 772: Opening Year – 2015	***Metrorail Alternative with Alignment T6 in Tysons Corner and Yard Site 15 on Dulles Airport property***	$3.4 billion
General Plans - Revisions		
○ Metrorail Alignment		
Orange Line Junction	☐ ***Lower the profiles of both the guideways and yard lead north of the Orange Line junction to reduce visual effects to communities adjoining the Dulles Connector Road.***	
Tysons East Station Vicinity	☐ ***Eliminate the pocket track east of Tysons East Station and realign the oblique aerial crossing of Route 123 in order to reduce the costs and visual effects of this complex crossing.*** ☐ ***Add an aerial double crossover east of the Tysons East Station in lieu of the eliminated pocket track.*** ★ ***Shift the crossover eastward to be closer to the interchange area of Route 123 and the Dulles Connector Road and farther from future development.***	
Tysons Central 7 Station Vicinity	☐ ***Add an underground double crossover west of Tysons Central 7 Station for more efficient single-tracking operations.***	
Wiehle Avenue Station Vicinity	☐ ***Widen track centers through the tail tracks of the Wiehle Avenue Station to allow personnel and equipment access to the stored trains for maintenance and cleaning.***	
Dulles Airport Vicinity	☐ ***Lower the profile of the at-grade alignment west of Route 28 so that the view of the historic Airport terminal is protected.*** ☐ ***Relocate the emergency access shaft for an underground section of alignment from the secure airside of Dulles Airport to two locations on the Airport's landside.*** ☐ ***Relocate the portal northward at the western end of the Dulles Airport tunnel.***	
○ Metrorail Stations		
Tysons East Station	☐ ***Shift the Tysons East Station a short distance westward to accommodate the realignment described above.***	
Tysons Central 123 Station	☐ ***Reconfigure the south side bus bays and add north side bus bays at Tysons Central 123 Station.***	
Tysons West Station	☐ ***Reduce the capacity of the park-and-ride structure at Tysons West Station from 2,000 to 500 spaces. Incorporate these 500 spaces into the redevelopment of parcels in the vicinity of the station.*** ☐ ★ ***Conduct a post-hearing conference on alternative site plans.***	

[1] These capital costs do not include potential financing costs due to funding availability.

★ The star signifies recommended revisions to the Project in response to public hearing comments received by the Project Team.

Wiehle Avenue Station	□ ★ ***Through Fairfax County, solicit joint development proposals. If joint development does not progress, construct the Option A site plan for station facilities or a variant that accommodates future joint development, but without its temporary parking requirement.*** □ ★ ***If necessary, locate the temporary bus facilities and parking on an alternative site during the construction of Option A or of joint development.*** □ ★ ***Add bus bays on eastbound exit ramp of the interchange between the Dulles Toll Road and Wiehle Avenue.*** □ ★ ***Rearrange express bus routes to reduce the number of buses turning left from the eastbound exit ramp of the interchange between the Dulles Toll Road and Wiehle Avenue.***
Reston Parkway Station	□ ***Reconfigure the north side station facilities, including a different access intersection with Sunset Hills Road.***
Route 28 Station	□ ***Reconfigure bus bays and eliminate the official Kiss & Ride at the south side station facilities.***
Route 606 Station	□ ***Reduce the capacity of the park-and-ride structure from 4,000 to 2,000 spaces for the full LPA.***
Route 772 Station	□ ***Add two park-and-ride structures with a total capacity of 3,300 spaces for the full LPA.*** □ ***Reconfigure the station site plans and pedestrian bridges*** □ ★ ***Develop a transit center as part of LPA Phase 1.***
Other	□ ***Rename two stations for planning purposes: Tysons Central C to Tysons Central 7 and Tysons Central D to Tysons Central 123.***

○ Metrorail West Falls Church S&I Yard

Mitigation	□ ***Implement noise mitigation measures to reduce the wheel squeal noise of the train movements within the Yard. Enclose the loop tracks and new yard lead in box structures.***
Capacity	□ ***Increase storage spaces for rail cars from 26 to 42 for a total of 190 spaces.*** □ ***Add 8 more maintenance spaces for rail cars in the Yard shop for a total of 28. The Yard shop would be expanded southward towards I-66. The existing service road would be relocated along the I-66 embankment by using a retaining wall.***

○ Metrorail Ancillary Facilities

Tie Breaker Station 2 (TBS2)	□ ★ ***Conduct a post-hearing conference on alternative location(s).***
Traction Power Substation 2	□ ★ ***Relocate westward to the southwest quadrant of the Magarity Road underpass of the Dulles Connector Road. Include this relocation in the post-hearing conference of Tie Breaker Station 2.***
Traction Power Substation 18	□ ***Coordinate with the Airports Authority on a final location on airport property.***
Tie Breaker Station 8 and Traction Power Sub Station 19	□ ***Coordinate with owner/developers on final locations within future development.***
Stormwater management facilities	□ ***Consider possible reconfiguration of certain stormwater management ponds in order to lessen the effects upon properties.***

★ The star signifies recommended revisions to the Project in response to public hearing comments received by the Project Team.

A.1 RECOMMENDED LOCALLY PREFERRED ALTERNATIVE

The Project Team reaffirms the Metrorail Alternative as the LPA and recommends its development in two phases. The full LPA is from the existing Orange Line through Tysons Corner to Route 772 in Loudoun County. LPA Phase 1 is from the Orange Line to Wiehle Avenue in Fairfax County. The full LPA and LPA Phase 1 are depicted in Figure A-1. The horizontal and vertical alignments of the recommended full LPA and LPA Phase 1are depicted in the General Plans, as revised in Table A-1 above and as described in Section A.2 below.

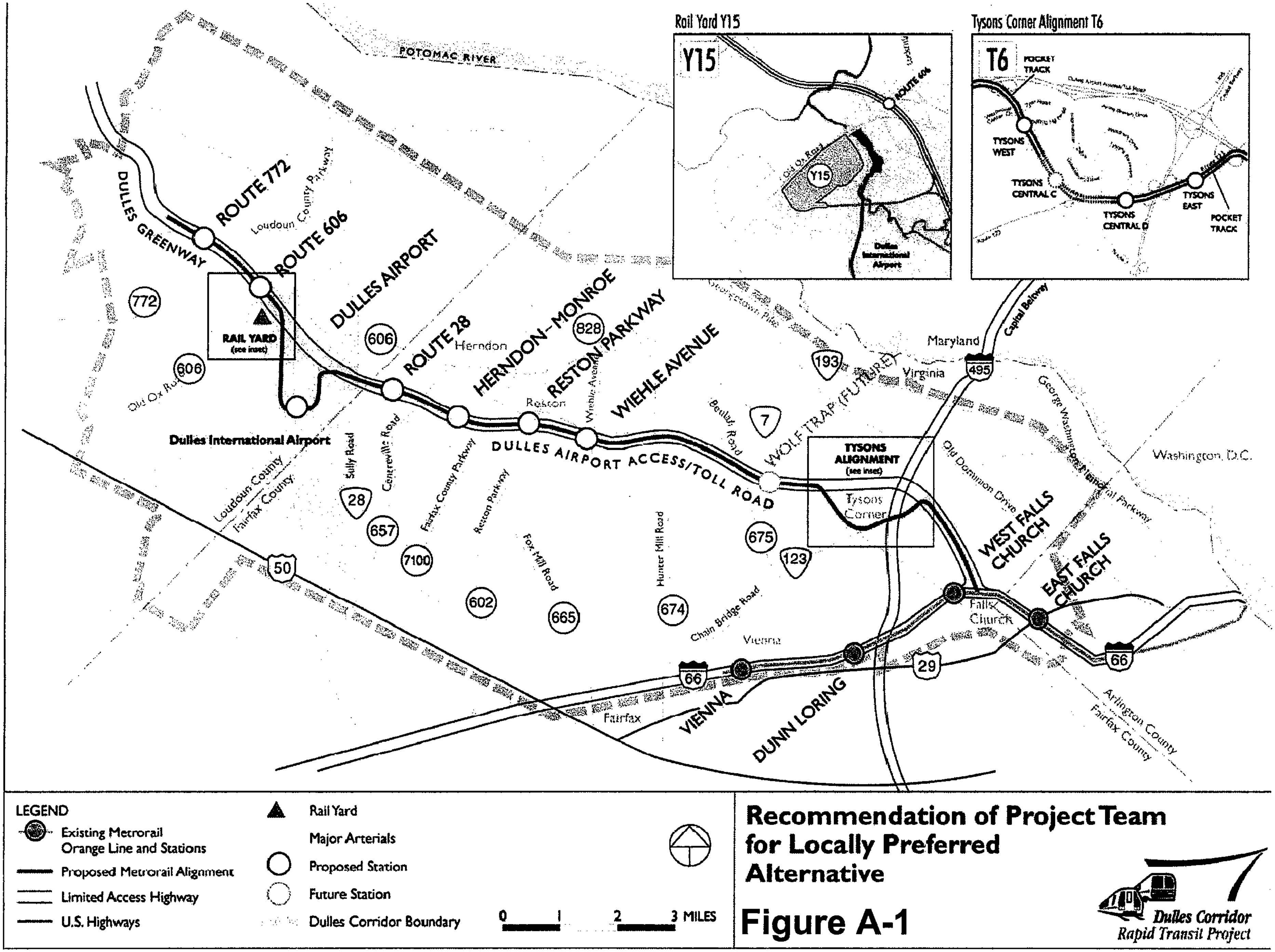
The full LPA and, to some extent, the LPA Phase 1 will:

- Provide access to corridor activity centers because it directly serves Tysons Corner.
- Provide service to regional activity centers.
- Offer travel times for trips within the corridor, which are competitive with highway travel times.
- Attract the highest number of total riders and new riders, and provides for the highest corridor transit mode share.
- Provide the greatest increase in person-throughput capacity in the corridor.
- Support the comprehensive plans of Fairfax County and Loudoun County.
- Allow for transit-oriented development to be focused in station areas based on the amended comprehensive plan of Fairfax and Loudoun Counties.
- Increase overall mobility in the corridor, the Counties, and the region, especially in combination with the planned transit-oriented development.
- Reduce emissions and improve the region's air quality.
- Conform to the region's air quality plans.

To meet the increasing travel demand of the Dulles Corridor while the full LPA is being implemented, the Project Team recommends that the existing transit service provided by Fairfax and Loudoun Counties be further enhanced beyond the bus rapid transit elements that have already been added. Prior to the opening of LPA Phase 1, additional bus rapid transit elements—including the expansion of the Herndon-Monroe park-and-ride lot (site of the future Herndon-Monroe Metrorail Station), ITS enhancements, and facility improvements—should be advanced.

Until the opening of the full LPA, LPA Phase 1 should retain this rapid transit service between Wiehle Avenue and Route 772. Where appropriate, routes would be reconfigured to optimize service to markets in the western portion of the Dulles Corridor. Loudoun County would, however, retain its current commuter service (Loudoun to Rosslyn and D.C.) for LPA Phase 1. Otherwise, all express bus services currently serving the West Falls Church Station will be directed to Wiehle Avenue Station.

The operators of this rapid transit service in the Corridor, which the Supplemental Draft EIS describes as premium bus service, would remain the two Counties. The two Counties would provide any additional vehicles for the service, purchasing them from funding sources other than the Project. The operation of the Airport bus service to Wiehle Avenue Station will be addressed during preliminary engineering.



Recommendation of Project Team for Locally Preferred Alternative

Figure A-1

Dulles Corridor Rapid Transit Project

A.1.1 Tysons West Station Entrance and Facilities

The public hearing record has numerous comments on the Project Team's proposal for the Tysons West Station and its facilities. The Fairfax County Board of Supervisors, its Non-Motorized Transportation Committee and the business directly affected by the facilities were among the major stakeholders who provided comments on this issue. In response to these comments, the Project Team will evaluate alternative site plans and conduct a post-hearing conference for the property owners and tenants that are directly affected by these alternative site plans. A post-hearing conference serves as a mini-public hearing and follows a similar process of formal notification, conference itself, record of comments, conference report with recommendation, its review, conference report supplement with final recommendation, and action by DRPT and WMATA Board of Directors. For the conference, the Project Team will also notify the Fairfax County and VDOT plus those parties who have expressed interest and/or delivered comments into the public hearing record with respect to the Tysons West Station and its facilities.

A.1.2 Wiehle Avenue as Interim End-of-Line Station

The public hearing record has numerous comments on the Team proposal that Wiehle Avenue Station be the interim end-of-line for LPA Phase 1. The Fairfax County Board of Supervisors, Reston Association, and Reston Chamber of Commerce were among the major stakeholders who provided comments on this issue. The comments have been summarized as follows:

- Wiehle Avenue Station should not be the interim end-of-line station or, at least, should be a truly temporary end-of-line station.
- To lessen the effects of an end-of-line station, the construction of the park-and-ride facility at the Wiehle Avenue Station should not commence until the remainder of the full LPA has its funding secured.
- Wiehle Avenue Station, its facilities and its access should be part of an overall plan of transit-oriented redevelopment, as envisioned by the Dulles Corridor Land Use Task Force and as documented by the Fairfax County Comprehensive Plan, as amended.
- Civic associations desire to participate in the final planning and design of the Station and its surrounding environment.

For the Project Team, which has an overview of the Corridor's travel demand and of project justification by Federal criteria, there is a very important need to have adequate facilities at the end-of-line station at the start of Metrorail operations. The Project's goal of improved mobility must be supported by complete access to the station. With respect to the Federal criteria, FTA is placing increased emphasis on the cost-effectiveness of projects proposed for funding; the cost-effectiveness measure relies on the transportation benefits of the Project. Not to have the transportation benefits that the recommended park-and-ride facility offers would lower the FTA's rating of the Project and thus affect its prospect for funding. In addition, the Project's operating funding plan relies on the forecast ridership and revenue; reduced access translates into higher public subsidy. In order to be responsive to the above hearing comments, the Project Team has formulated the following approach that achieves a balance of land-use objectives and mobility improvements.

The Team recommends that Fairfax County, with DRPT and WMATA assistance, solicit joint development proposals that would incorporate both the Project's station facilities and the community's desire for transit-oriented mixed-use development at this site. The recommended joint development approach includes several aspects:

- Fairfax County, working with the local community and other stakeholders, would take the lead on identifying potential development concepts for the Wiehle Avenue Station area. This effort would be completed prior to any formal joint development solicitation.
- Fairfax County, with DRPT and WMATA assistance, would approach adjacent property owners or invite the development community to prepare proposals. Civic associations and other stakeholders would be invited to review and comment on this solicitation before its issuance.
- The site plan of a joint development proposal would show the Project's station facilities. The Wiehle Avenue Station facilities are identical for LPA Phase 1 and the full LPA, with the exception of eight additional bus bays for LPA Phase 1.
- Within any joint development proposal, the joint developer could:
    - invite adjacent property owners to participate.
    - propose that the Project Team build the station facilities according to its site plan.
    - call for the Project's contribution of capital funds, but should propose annual payments for the long-term use of the public lands.

In order to assure that the station facilities would be ready at the start of Metrorail operations, if a joint development agreement was not signed by a certain date, the Project Team would proceed with the design and construction of Option A site plan of station facilities or a variant that accommodates future joint development. These, however, would be without the temporary parking requirement of Option A as depicted in the General Plans-Revisions, October 2003. Option A site plan uses the existing Reston East park-and-ride lot, which is owned by Fairfax County.

For both joint development and for Option A site plan, the station facilities include pedestrian and bicycle connections/accessible route, bicycle lockers and racks, bus bays, Kiss & Ride with taxicab spaces, park-and-ride facility, motorcycle spaces and new roadway access. The new roadway access would be the westward extension of the existing Reston East access road to the private road that has a signalized intersection with Sunset Hills Road and Isaac Newton Square. During the construction of joint development or Option A site plan, the Project Team would, if necessary, locate temporary bus facilities and parking on an alternative, but economical, site.

The Project Team desires that the community understand how the traffic of the station facilities will be mitigated. First, the peak activity at the station will be early on weekday mornings and the park-and-ride structure will likely be full before the local peak hour of Reston. For instance, the final park-and-ride customers of Metrorail would arrive before 7:30 a.m., while the local peak hour would be between 7:30 a.m. and 8:30 a.m. Second, several roadway mitigation measures are proposed, including an additional left-turn lane on Wiehle Avenue northbound, a left-turn lane on Sunset Hills Road westbound, a westward extension of the existing Reston East access road, plus other intersection improvements that will be studied as part of the Final EIS. Finally, the Team has rerouted the feeder bus service to distribute arrivals at the station among three separate locations. In summary, while the Wiehle Avenue Station will have higher early peak hour activity than that of the existing Reston East facility, the Project will invest in measures to mitigate the effects of the additional traffic.

A.1.3 Tie Breaker Station 2 and Traction Power Substation 2

The public hearing record has comments on the Project Team's proposed location for Tie Breaker Station 2 (TBS2) from the residential property owners directly affected by the location and their neighbors, all on Baldwin Drive, Fairfax County. In response to these comments, the Project Team will evaluate alternative locations and conduct a post-hearing conference for the property owners that are directly affected by these locations. A post-hearing conference serves as a mini-public hearing and follows a similar process of formal notification, conference itself, record of comments, conference report with recommendation, its review, conference report supplement with final recommendation, and action by DRPT and WMATA Board of Directors.

The Project Team is relocating Traction Power Substation 2 westward to the southwest quadrant of the Magarity Road underpass of the Dulles Connector Road. The affected property owners and parties are unchanged: FAA, MWAA and VDOT. However, since the view shed of nearby residences will change due to the relocation, those residential property owners and any tenants will be invited to participate in full in the post-hearing conference of Tie Breaker Station 2.

A.2 RECOMMENDED GENERAL PLANS

The horizontal and vertical alignments of the recommended full LPA and LPA Phase 1 are depicted in the Plan and Profile Drawings of the General Plans, commencing at the junction with the existing Metrorail Orange Line under the Haycock Road bridge and proceeding westward in the median on the Dulles Connector Road in Fairfax County, through Tysons Corner by Alignment T6, continuing in the median of the Dulles International Airport Access Highway (DIAAH), through Dulles Airport, as modified by relocation northward of the portal at the Dulles Airport Marriott, then continuing in the median of the Dulles Greenway Toll Road to Route 772 in Loudoun County.

The General Plans show the following:

- The end of LPA Phase 1 trackwork 3,250 feet west of the center of the Wiehle Avenue overpass.
- Location of the eleven (11) stations and the site plans of the station facilities. Of these eleven stations, the first five will be part of LPA Phase 1.
- Location and type of special trackwork of the alignment, including three pocket tracks, a maintenance track east of Herndon-Monroe Station, double crossovers, single crossovers, the yard lead to West Falls Church Yard, the yard leads to Yard Site 15, and tail tracks west of Route 772 Station.
- Location of traction power substations, tie breaker stations and stormwater management facilities.
- At the West Falls Church Yard, significant noise mitigation to address the wheel squeal noise of the train movements, plus the increase of new storage spaces for rail cars and the addition of maintenance spaces in the Yard shop.
- Service & Inspection Yard at Yard Site 15 on Airport property
- Location of four portals of two underground sections, one in Tysons Corner and the other in Dulles Airport property.

- Realignment of the Dulles International Airport Access Highway at the four median stations.
- Realignment of the Dulles Greenway at two stations and at the yard leads for Yard Site 15.
- Accommodation of a future Wolf Trap Farm Park Station. During preliminary engineering, the Project Team will determine which elements of the future station should be constructed during LPA Phase 1.
- Development of a transit center at Route 772 as part of LPA Phase 1 in lieu of the supplemental park-and-ride at Route 606. The transit center will use the site and elements of the station facilities of the full LPA.

The Project Team recommends for approval the revisions of the General Plans as listed in Table A-1 above and described above. Should there be changes to the Project as the result of the determination of mitigation measures and of continuing coordination described below in Sections A.3 and A.4, the Project Team will seek approval of amendments to the General Plans from the WMATA Board of Directors.

The Project Team will coordinate with environmental regulatory agencies on the FAA NEPA approach, with TSA for its review and concurrence, and with MWAA and FAA on their processes for approval for use, for the conveyance of Airport property and for incorporation of safety and security programs.

A.3 RECOMMENDED MITIGATION PLAN

The Project Team has analyzed and documented reasonable alternatives that would avoid or reduce adverse impacts. Overall, the impacts of the recommended full LPA and LPA Phase 1 are anticipated to be minor, especially given the length and complexity of the Alternative. In response to comments in the public hearing record, the Project Team is recommending the following elements of a mitigation plan.

A.3.1 Noise

With respect to Metrorail operations on the Dulles Corridor line, the Project Team will implement the following mitigation, as described in the Draft EIS and Supplemental Draft EIS:

- 3-foot high parapet or sound barriers along aerial sections of track, except on Dulles Airport property.
- 5-foot high sound barriers (3 feet above top of rail) in specific locations along at-grade sections of track, as identified during preliminary engineering and/or final design.
- 5-foot high sound barriers (3 feet above top of rail) at the single crossovers west of Pimmit Run.

With respect to concerns of communities on the potential of highway noise reflecting from the Metrorail structure and its sound barriers onto the communities, the Project Team will analyze this reflection potential during preliminary engineering and/or final design. If the results call for mitigation, the measure may be an acoustically absorptive surface on the exterior of the Metrorail structures. In addition, the Project Team will address the potential of steel box girders of Metrorail aerial structures for emitting unwanted sound effects. If the results call for mitigation, the measure may be internal devices within the girders for dampening the sound emission.

With respect to the concerns of communities on the noise of the Metrorail West Falls Church Yard, the Project Team recommends the enclosure of 1) a portion of the loop track at the yard's eastern end and 2) the new yard lead in box structures. These noise mitigation measures by the Project will reduce the wheel squeal noise of the train movements within the Yard. The Project Team notes, however, that new residences have been recently constructed and occupied adjacent to the West Falls Church S&I Yard without any noise mitigation provided by the residential developer. As during the past ten-year effort to address yard noise, there will be coordination among DRPT, WMATA, Fairfax County officials and staff, and representatives of the communities.

With respect to the concerns of communities on the noise of the Dulles Connector Road, the Commonwealth of Virginia will seek to address the existing noise effects upon the residential communities with noise abatement measures. If the Commonwealth decides to proceed with noise abatement measures, it would bear most of the cost of the abatement, since this is an existing condition due mainly to traffic to and from the Dulles Toll Road. The Project itself would share in the cost of abatement proportional to the Project's contribution to the future levels of noise and to its visual effects. DRPT has identified itself as the lead agency for the coordination among VDOT, MWAA, WMATA, FTA, Fairfax County officials and staff, and representatives of the affected communities.

A.3.2 Visual

With respect to Metrorail aerial structures, the Project Team should consider aesthetic designs that are compatible with the surrounding environment.

With respect to traction power substations (TPSS) and tiebreaker stations (TBS), the Project Team will design these structures to be compatible with any residential or other sensitive environment, using established designs of built substations in similar situations. There will be continued coordination with the affected property owners and/or civic associations.

With respect to the visual effects upon Dulles Airport, the Project Team will design the two Metrorail tunnel portals and their security barriers to take into consideration the historic terminal and the surrounding historic district. The Project Team will also design the Metrorail alignment to avoid interference with the historic view sequence of the terminal approach. There will be continued coordination among MWAA, FAA, the Virginia State Historic Preservation Officer, and, if necessary, the National Capital Planning Commission.

A.3.3 Roadway Network

Station access has been an important issue in light of the comprehensive planning of the two Counties for mixed-use development at the Metrorail stations. The Draft EIS identifies proposed mitigation measures as part of the traffic analysis. These include intersection improvements and the addition of through lanes. The Project Team will confirm these mitigation measures with VDOT, Fairfax County and Loudoun County during the preparation of the Final EIS and seek their programming in the Commonwealth and regional transportation plans.

A.3.4 Construction Effects

Specific to Tysons Corner, the Project Team will develop and administer a business advisory team to provide a forum for affected businesses and communities to participate in the implementation of the Project, particularly the mitigation of the construction effects and maintenance of traffic in Tysons Corner. The business advisory team will include representatives from DRPT, WMATA, VDOT, Fairfax County, TYTRAN (a transportation demand management association), local chambers of commerce, major property owners, civic associations, contractor(s) and utilities and will provide advice in accordance with guidelines established during the preliminary engineering phase.

General to all sections of the Dulles Corridor, every effort will be made to maintain access to businesses, including pedestrian and vehicular access, during construction periods. Where possible, existing access points (e.g., driveways and building entrances) will be preserved and protected from construction disruption. When construction activities require temporarily moving access points, alternative access will be provided and potential patrons will be directed to these alternatives by prominent signage and well-marked detour routes. Construction priorities will include maintenance of high-visibility business signs, directional signage to parking, and well-marked pedestrian paths.

Moreover, DRPT and WMATA will maintain thorough and continuous communication among all public and private stakeholders throughout the implementation of the Project in order to minimize construction effects. This effort will include updates on the location of construction work zones, staging areas, and haul routes.

A.4 CONTINUING COORDINATION

In addition to continuing coordination with residents, business owners, civic associations, agencies, jurisdictions, elected officials and other stakeholders on the recommended mitigation plan during the preparation of the Final EIS, the following continuing coordination is recommended.

A.4.1 Master or Comprehensive Agreements

During preliminary engineering, DRPT will develop agreements with the following parties:

- Fairfax County.
- Loudoun County.
- TRIP II, owner of the Dulles Greenway.
- Metropolitan Washington Airports Authority.
- U.S. Department of Interior, National Park Service, for the future Wolf Trap Farm Park Station.

- WMATA as the operator and owner of the Metrorail system.

In addition, during preparation of the Final EIS, the Section 106 Agreement addressing treatment of historic sites and properties will be finalized with the Virginia Department of Historic Resources. Section 106 refers to a portion of the Federal law governing historic preservation issues.

A.4.2 Financial Planning and Funding

DRPT, the project sponsor, with WMATA support will continue its coordination and development of the capital and operating funding plans, culminating in a final financial plan. The final financial plan will support local funding agreements and the federal Full Funding Grant Agreement.

A.4.3 Safety and Security Programs

The Project Team will incorporate the elements and operation directives of new safety and security programs of WMATA for the Metrorail system and of TSA, FAA and MWAA for Washington Dulles International Airport.

A.4.4 Transit-Oriented Development

The Project Team will continue to participate in the efforts of Fairfax and Loudoun Counties and of private stakeholders for the creation of transit-oriented development at the new Metrorail stations. Advanced urban design and friendly pedestrian connections will be the goals of the efforts. If so requested by the Counties, the Project Team will serve as facilitators among the interested parties.

With respect to air rights development above Metrorail stations, the Project Team acknowledges that the two Counties govern land use and that FAA, MWAA, VDOT and TRIP II, as the owners and operators of the DIAAH, Dulles Toll Road and Dulles Greenway, must be involved. Therefore, the Project Team will await any initiative of the two Counties with the involvement of the highway owners and operators.

A.4.5 Station Facilities and Access

For reference within these recommendations, WMATA has established a ranking (in descending order) of priorities for access and proximity to a station: pedestrian and bicycle/accessible route, transit buses, Kiss & Ride (and motorcycles), high occupancy vehicles and park-and-ride. Bicycle lockers and racks are located close to the station entrance. Together, these elements form the station facilities. A station site plan lays out the facilities and identifies the access connections to the public roadway network.

The Project Team will continue to coordinate and develop the site plans of the new Metrorail stations with Fairfax County, Loudoun County, Town of Herndon, VDOT and private developments. This effort will be in conjunction with the continuing coordination for transit-oriented development, described above. The site plans will advance during the preparation of the Final EIS and the General Plans for the full LPA and LPA Phase 1. The design of the station facilities will be advanced during preliminary engineering and final design.

Specific site plans under review include, but are not limited to, the following:

- The station entrance, facilities and access of Tysons West Station, as described in Section A.1.1 above.
- Any joint development proposal for the north side station facilities and access of Wiehle Avenue Station, as described in Section A.1.2 above.
- The future north side bus bays and Kiss & Ride at the Herndon-Monroe Station. The continuing coordination will await the submittal of redevelopment proposals for parcels north of the Dulles Toll Road. Until that time, bus stops along Herndon Parkway and a pedestrian connection will serve as the station facility and access point; these are depicted in the General Plans, dated June 2002.
- The pedestrian connections between the station facilities and the proposed development north of Route 606 Station.
- Development of a transit center at Route 772 as part of LPA Phase 1 in lieu of the supplemental park-and-ride at Route 606. The transit center will use the site and elements of the station facilities of the full LPA. However, the site and its neighboring parcels are undeveloped as is the roadway network. If the roadway network, which will be built by future, adjacent development, does not exist in advance of the opening year of LPA Phase 1, DRPT will consider the postponement of the construction of the transit center; its intermodal functions of park-and-ride and bus bays may be temporarily located in the locale of the site. In addition, DRPT will be determining the funding sources of this transit center during the preliminary engineering phase.

A.4.6 Metrorail Alignment at Capital Beltway

The Project Team will continue coordination with VDOT on the vertical Metrorail alignment at the Capital Beltway. VDOT seeks to improve the Beltway and to reconfigure the interchange of the Beltway and Route 123. The proposed reconfiguration would require a higher Metrorail alignment.

A.4.7 Metrorail Alignment and Dulles International Airport Access Highway

In combination, the realignment of the Dulles International Airport Access Highway (DIAAH) by the Project and the planned widening of the DIAAH from four to six lanes by MWAA will, in most likelihood, require the realignment of the Dulles Toll Road at the Herndon-Monroe Station and at the Route 28 Station. If the program of the Airports Authority to widen the DIAAH to six lanes is before, during or soon after the completion full LPA, the Project Team will consider the realignment of the Dulles Toll Road at these two stations as a direct effect of the Project. If the program to widen the DIAAH is long after the completion of the full LPA, the Project Team will regard the realignment of the Dulles Toll Road as an issue independent from the Project. For the purposes of the Final EIS and General Plans, the Project Team will incorporate the widening project into both documents and will coordinate the design of the Project with a concurrent MWAA design of the DIAAH widening.

A.4.8 DIAAH Shoulder Widths

The General Plans depict the Project's realignment of the four-lane DIAAH at the four median stations of Wiehle Avenue, Reston Parkway, Herndon-Monroe and Route 28. The shoulder widths through these sections of realigned lanes are, for the most part, in conformance with the standard widths established by AASHTO. However, with construction of the Project and the planned widening of the DIAAH to six lanes, in some limited locations the shoulder widths may require an exception to these standards. During preliminary engineering, DRPT, WMATA and MWAA will identify specific areas of concern and work cooperatively to minimize any exceptions to standard designs.

A.5 UNRESOLVED ISSUES

In addition to those Project issues and effects documented in the Draft EIS, Supplemental Draft EIS and the General Plans, and in addition to the above final recommendations, there are certain unresolved issues that the staffs of DRPT and WMATA bring to the attention of the Commonwealth Transportation Board and the WMATA Board of Directors. While resolution of these issues must accompany the development of master or comprehensive agreements, the two Boards should understand the import of each. The recommendation of the WMATA staff is that there shall be no indemnification obligations from WMATA to Toll Road Investors Partnership II, Metropolitan Washington Airports Authority, or any other entity associated with the Project

A.5.1 TRIP II, Owner and Operator of the Dulles Greenway

The Dulles Greenway is a private toll road, owned and operated by Toll Road Investors Partnership II (TRIP II). Through its Comprehensive Agreement with the Commonwealth's State Corporation Commission, TRIP II will dedicate its 40-foot wide median to the Commonwealth for the Project. Through its Position Statement, dated June 10, 2002, for the Project's first set of public hearings, TRIP II has stated that it wishes to be properly indemnified and held harmless at all times from costs, claims, and liabilities resulting from the presence of the Dulles Corridor Rapid Transit Project on Dulles Greenway property. The Project Team infers that TRIP II is seeking indemnity or an assumption of financial responsibilities from the Commonwealth (DRPT) and/or WMATA for any costs of defense, claims of liability, and compensation resulting from the construction and operation of the full LPA on the Dulles Greenway Toll Road. This may include certain freeway accidents. TRIP II also seeks to obtain additional monetary compensation from the Commonwealth (DRPT) and/or WMATA for certain claimed expenses, cost increases, and lost toll revenues that it may attribute to the construction and operation of the full LPA in the mass transit-reserved center median and other rights-of-way of the Dulles Greenway.

A.5.2 MWAA, Operator of the Dulles Connector Road, Dulles International Airport Access Highway and Dulles Airport

The Federal government is the owner of the Dulles Connector Road, the Dulles International Airport Access Highway and Dulles Airport property. In 1987, these facilities were transferred to MWAA under a 50-year lease, with the Federal government retaining ownership and title to the land. This lease was recently extended to 2067. MWAA is wholly responsible for the maintenance and improvements to these properties and maintains control and authority over uses within their boundaries. MWAA would require DRPT and/or WMATA to be adequately insured for use of these properties by the Project, including the Access Highway median and the Service and Inspection Yard site. MWAA would request to be named as a co-insured party and indemnified by DRPT and/or WMATA against any liability including loss of life, injury and/or damage resulting from the Project.

A.6 RECOMMENDED FINAL ENVIRONMENTAL IMPACT STATEMENT

The Project Team recommends that the Commonwealth Transportation Board and the WMATA Board of Directors authorize the Project Team to prepare the Final EIS for the Dulles Corridor Rapid Transit Project. The Final EIS would incorporate the following:

- The selection and evaluation of the full LPA and the LPA Phase 1 with eleven (11) and five (5) stations respectively, as previously described and depicted in Figure A-1.
- The full LPA and LPA Phase 1 would reflect the final recommendations for the General Plans, as described above in Section A.2.
- Changes to the Project that would be the result of determination of mitigation measures and continuing coordination described above in Sections A.3 and A.4.

Coordination with property owners and tenants, civic associations, agencies and jurisdictions, elected officials and other stakeholders should continue through the preparation of the Final EIS. The Final EIS should reflect the additional refinements to the Project, which may be generated as a result of this continuing coordination.

Following the approval of the Final EIS by FTA and its issuance of a Record of Decision, the WMATA Board of Directors will be requested to approve amendments to the General Plans, which will incorporate the results of continuing coordination and incorporate the mitigation measures included in the Final EIS and Record of Decision and which are within WMATA's purview as defined by the master agreements with DRPT and affected agencies.

Attachment A

FINAL RECOMMENDATIONS OF THE PROJECT TEAM DULLES CORRIDOR RAPID TRANSIT PROJECT

Together, the staffs of DRPT and WMATA comprise the Project Team. The Project Team's final recommendations on the Locally Preferred Alternative (LPA) for the Dulles Corridor Rapid Transit Project are based on the analysis contained in the *Dulles Corridor Rapid Transit Project Draft Environmental Impact Statement* (EIS) *and Section 4(f) Evaluation* (June 2002), including the Proposed General Plans, and on the comments received during the public hearing process that followed their publication and during the review period of the *Public Hearings Report* (October 2002). The final recommendations derive from the completion of a series of studies, commencing with the Dulles Corridor Transportation Study (1994-1997), continuing through the Study's Supplement (1999), and culminating in the current federal environmental review process. For the implementation of the recommendations, once approved, the Team will continue coordination with FTA as the lead federal agency for the Project, FAA as a cooperating federal agency, National Park Service, VDOT, MWAA, Fairfax County, Loudoun County, Town of Herndon and City of Falls Church, plus stakeholders.

These final recommendations will serve to define the:

- LPA for documentation in the Final EIS,
- LPA for the Project's evaluation in the Federal Transit Administration's New Starts process, and
- Amendment to the WMATA Adopted Regional System, as documented by the General Plans.

More than 2,500 comments were received into the public hearing record. As described in Chapter 6.0 of the *Public Hearings Report*, the general consensus among elected officials, public agencies, and the general public, including property owners, community groups, civic associations, and businesses, is that Metrorail should be extended for the full length of the Dulles Corridor from the existing Orange Line through Tysons Corner to Route 772 in Loudoun County.

Until the start of revenue operations for the Metrorail Alternative, the Project Team recommends that the existing enhanced express bus service provided by Fairfax and Loudoun Counties be modified to incorporate elements of Bus Rapid Transit in order to satisfy the increasing travel demand of the Dulles Corridor. These elements may include pre-payment of fares, greater use of the Dulles Airport Access Road by the addition of slip ramps, improvements at West Falls Church northside bus facilities, and passenger amenities such as real-time information. Longer service hours and more frequent service will be considered as travel demand warrants.

In addition, many comments were received on the alternative Metrorail alignments through Tysons Corner. The majority of these comments indicated a clear preference for an alignment through Tysons Corner that would serve the largest area while avoiding impacts to residential property. Comments were received on the alternative sites for the Service and Inspection (S&I) Yard in Loudoun County. Among these comments were those of Loudoun County for the S&I Yard site upon Dulles Airport property.

The final recommendations of the Project Team are outlined in Table 1-1 and depicted in Figure 1-1. More detailed information regarding these recommendations is included in the remainder of this Attachment. Recommended mitigation plans, continuing coordination, and unresolved issues are also discussed.

Table 1-1: Final Recommendations of the Project Team

Decision Point	***Recommendations***	**Capital Costs[1]**	**Annual Operating Subsidy**
Baseline (No-Build) or Build	***Build***	(Millions in Year of Expenditure $ for opening year of 2010)	
Build Alternative	***Metrorail Alternative***		
Tysons Corner Alignment	***Alignment T6*** [2] ***with four stations in Tysons Corner***	$3,101	$66.0
Service & Inspection Yard	***Yard Site 15*** ***on Airport property***	+ $33	+ $1.3
Major Changes from Proposed General Plans			
Portal at Airport Marriott	***Relocation northward***	+ $10	—
Totals[3]		$3,144	$67.3

Notes: [1] Capital costs exclude cost of financing.

[2] Capital costs presented in Draft EIS and in this row include the cost to construct Yard Site 7. Therefore, the additional cost to construct and operate Yard Site 15 is included in the next row.

[3] Capital costs may increase if the Project adds a park-and-ride facility at Route 772 Station, as proposed by Loudoun County.

1.1 RECOMMENDED BUILD ALTERNATIVE

The Baseline Alternative would not meet the Project goal of providing improved transit service in the Dulles Corridor as well as the Build Alternatives. The Build Alternatives would offer a much better level of transit service than what is included under the Baseline Alternative, enhancing mobility for corridor residents and employees. Moreover, the Baseline Alternative would be inconsistent with local and regional comprehensive plans, which specifically identify rapid transit improvements in the Dulles Corridor as a critical element in shaping development in the corridor and meeting regional goals. Therefore, the Project Team recommends that a Build Alternative be carried forward as the LPA.

The Build Alternative recommended by the Project Team is the Metrorail Alternative. In order to satisfy the increasing travel demand of the Dulles Corridor while the Metrorail Alternative is being implemented, elements of BRT will be added to the existing enhanced express bus service. That service has been a successful prelude to the Dulles Corridor Rapid Transit Project and can be augmented at reasonable cost with BRT elements.

The horizontal and vertical alignment of the recommended Metrorail Alternative are depicted in the Plan and Profile Drawings of the General Plans, commencing at the junction with the existing Metrorail Orange Line under the Haycock Road bridge and proceeding westward in the median on the Dulles Connector Road in Fairfax County, through Tysons Corner by Alignment T-6, continuing in the median of the Dulles Airport Access Road (DAAR), through Dulles Airport, as modified by relocation northward of the portal at the Dulles Airport Marriott, then continuing in the median of the Dulles Greenway Toll Road to Route 772 in Loudoun County. The General Plans also depict the location, layout and access of the Metrorail Alternative's eleven (11) stations on the alignment, station facilities, special trackwork, traction power substations, tie breaker stations, stormwater management facilities and Service & Inspection Yard at Yard Site 15 on Airport property.

Additional information supporting this recommendation is provided in the text and Table 1-2 below.

The Metrorail Alternative is 24 miles in length from the Metrorail Orange Line in Fairfax County to Route 772 in Loudoun County. It has 11 stations, serving the major activity centers of the Dulles Corridor. The Metrorail Alternative is recommended by the Project Team because it would:

- Provide better access to corridor activity centers than BRT because it more directly serves Tysons Corner.
- Provide better service to regional activity centers because it does not require a mode transfer at the western edge of Tysons Corner nor at the Metrorail Orange Line.
- Offer shorter travel times for trips within the corridor, which are competitive with highway travel times.
- Attract the highest number of total riders and new riders, and provides for the highest corridor transit mode share among the Build Alternatives.
- Provide the greatest increase in person-throughput capacity in the corridor.
- Better support the comprehensive plans of Fairfax County and Loudoun County.
- Allow for more transit-oriented development to be focused in station areas based on the revised comprehensive plan of Fairfax and Loudoun Counties.
- Increase overall mobility in the corridor, the Counties, and the region, especially in combination with the planned transit-oriented development.
- Enhance air quality more than any of the other alternatives.
- Conform to the region's air quality plans by providing the greatest contribution to reducing emissions and improving the region's air quality.

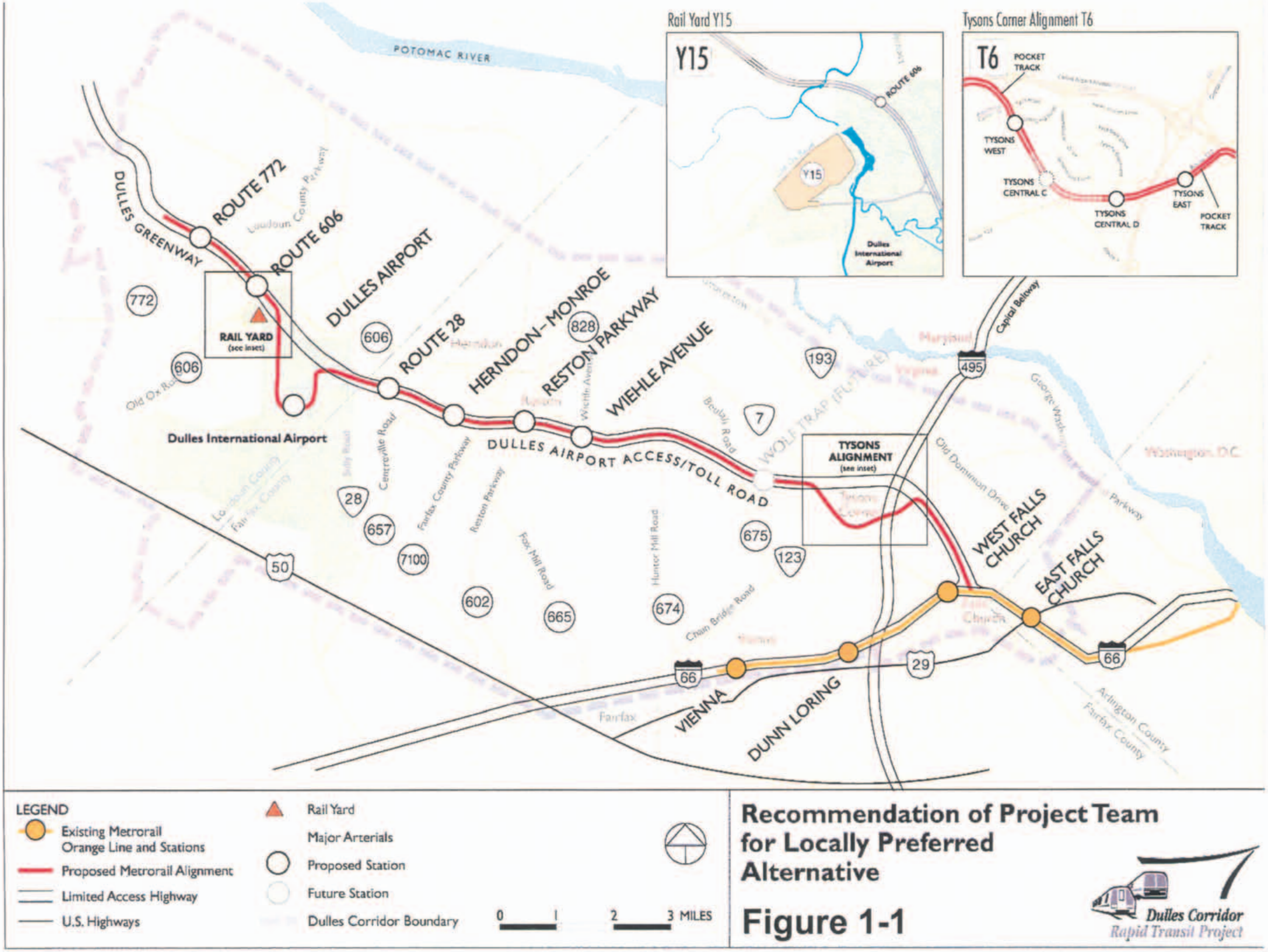
In addition, the Metrorail Alternative is the alternative most preferred by those submitting comments into the public hearing record.

Although the BRT Alternative does measure higher over Metrorail for implementation time and costs, it cannot satisfy the long-term travel demand of the corridor and does not provide necessary travel service through Tysons Corner. Such direct service was an alternative eliminated during the supplement to the Dulles Corridor Transportation Study. The reasons for the elimination remain the same. Since direct service would require a grade-separated guideway through Tysons Corner, it would increase the cost of BRT, increase the time to implement BRT, increase the impacts of BRT, and would still require a transfer at the Metrorail Orange Line, a feature that would reduce overall ridership.

The BRT/Metrorail Alternative would provide better connectivity to Tysons Corner than the BRT Alternative, but would not provide as direct a connection as Metrorail because it would require a transfer to travel between Tysons Corner and the western portions of the corridor. Also, BRT/Metrorail generally would have longer travel times and lower ridership than Metrorail.

The Phased Implementation Alternative would provide improved transportation service in the Dulles Corridor sooner than the Metrorail Alternative. However, this alternative has higher capital costs than Metrorail, and, in the long term, would not offer greater benefits than the Metrorail Alternative since it culminates with Metrorail for the full length of the Corridor. Moreover, during conversion from BRT to Metrorail, BRT service would be displaced from the median stations in the Mid-Corridor for 15 to 18 months; during this period, BRT service would be relocated to the park-and-ride facilities.

Given the general consensus among the public, agencies, and elected officials that Metrorail should be constructed in the corridor as soon as possible, the Project Team recommends that the greater transportation benefits provided by the Metrorail Alternative outweigh its relative costs, and that the Metrorail Alternative be carried forward as the LPA.



Recommendation of Project Team for Locally Preferred Alternative

Figure 1-1

Dulles Corridor
Rapid Transit Project

Table 1-2: Comparison of Baseline and Build Alternatives

Measure of Effectiveness	Baseline (No Build)	BRT	Metrorail	BRT/Metrorail	Phased Implementation
Transportation Service and Ridership					
Improve Transit Travel Times for Trips within Corridor	○	◐	●	◐	●
Improve Transit Travel Times for Trips to Region	○	●	●	◐	●
Daily Ridership (2025)	—	49,400	86,900	70,500	86,900
New Riders (2025)	—	12,500	38,300	25,100	38,300
Provides Improvements As Soon As Possible	---	●	○	◐	●
Maintains Service Without Interruption	---	●	●	●	○
Land Use and Economic Conditions					
Consistent with Existing and Future Plans	○	◐	●	●	●
Improve Accessibility to Corridor Activity Centers	○	◐	●	●	●
Improve Accessibility to Regional Activity Centers	○	◐	●	●	●
Environmental Effects					
Enhancement of Air Quality	○	◐	●	◐	●
Conformity with Regional Air Quality Plans	○	●	●	●	●
Effects on Natural Resources	---	●	◐	◐	◐
Visual Effects	---	●	◐	◐	◐
Costs					
Capital Costs (Millions in YOE $)	—	$481.4	$3,101.3	$1,454.1	$3,295.4
Annual Operating Costs in 2025 (Millions in YOE $)	—	$54.1	$179.4	$114.9	$179.4
Other					
Preference in Hearing Record	○	○	●	○	○

Legend:		
	●	Good
	◐	Fair
	○	Poor

1.2 RECOMMENDED GENERAL PLANS

The horizontal and vertical alignment of the recommended Metrorail Alternative are depicted in the Plan and Profile Drawings of the General Plans, commencing at the junction with the existing Metrorail Orange Line under the Haycock Road bridge and proceeding westward in the median on the Dulles Connector Road in Fairfax County, through Tysons Corner by Alignment T6, continuing in the median of the Dulles Airport Access Road (DAAR), through Dulles Airport, as modified by relocation northward of the portal at the Dulles Airport Marriott, then continuing in the median of the Dulles Greenway Toll Road to Route 772 in Loudoun County.

These Plan and Profile Drawings show the following:

- Location of the eleven (11) stations.
- Location and type of special trackwork of the alignment, including three pocket tracks, a maintenance track east of Herndon-Monroe Station, double crossovers, single crossovers, the yard lead to West Falls Church Yard, the yard leads to Yard Site 15, and tailtracks west of Route 772 Station.
- Location of traction power substations, tie breaker stations and stormwater management facilities.
- Addition of storage tracks for 26 Metrorail vehicles to the existing West Falls Church yard.
- Location of four portals of two underground sections, one in Tysons Corner and the other in Dulles Airport property. For the most westerly portal within the property of Dulles Airport, the Project Team recommends its minor northward relocation so that the Project's effects upon the Dulles Airport Marriott are lessened.
- Realignment of the Dulles Airport Access Road at four stations.
- Realignment of the Dulles Greenway at two stations and at the yard leads for Yard Site 15.
- Accommodation of a future Wolf Trap Farm Park Station. Commencing with preliminary engineering, the Project Team will determine which elements of the future station should be constructed during the Metrorail Alternative.

The location, layout, facilities and access of the eleven stations and of the Service & Inspection Yard of the recommended Metrorail Alternative are depicted in the Site Plan and Entry Plan Drawings of the General Plans. The Project Team confirms that the Route 772 Station will have pedestrian bridge connections to both roadsides of the Dulles Greenway.

The Project Team recommends for approval the General Plans as described above and as modified for the relocation of the portal at the Dulles Airport Marriott. Should there be changes to the Project as the result of the determination of mitigation measures and of continuing coordination described below in Sections 1.3 and 1.4, the Project Team will seek approval of amendments to the General Plans.

1.2.1 Recommendation for a Tysons Corner Alignment

The Project Team recommends that the Metrorail Alternative follow Alignment T6 in Tysons Corner because it would:

- Provide for the highest ridership, highest number of new riders, and highest transit mode share for most corridor subareas;

- Be consistent with existing transportation infrastructure and planned improvements;
- Have fewer neighborhood effects than other alignments, especially relative to visual effects; and
- Offer more operational flexibility due to its pocket tracks and center platform stations.

As depicted in Figure 1-1, Alignment T6 has four stations within Tysons Corner, three of which are aerial and one of which is underground.

As shown in the Table 1-3, Alignment T6 has the highest ridership benefits with comparatively few impacts. However, it also has marginally higher capital costs in comparison to the other Tysons Corner alignments. As stated under Continuing Coordination, the Project Team will investigate the optimum horizontal and vertical alignment in order to reduce capital costs by minimizing the depth and length of the cut-and-cover section of the Alignment T6 parallel to Route 7.

Alignment T9 would have the same ridership benefits as Alignment T6 because it includes the same number of stations in the same locations. Alignment T9 is not recommended because it has greater visual effects than Alignment T6 because most of the alignment is aerial and the stations are larger in mass due to side platform stations. Moveover, Alignment T9 is without pocket tracks and therefore does not offer train turnback operations. Alignment T9 might conflict with proposed transportation improvements in Tysons Corner, as conceived by VDOT and if these improvement were approved and implemented.

Alignment T1 would have similar impacts to Alignment T6, because the configurations of these alignments are similar. However, Alignment T1 is not recommended because it includes fewer stations than Alignment T6 and provides less service within the core of Tysons Corner.

Alignment T4 would include more stations in the core of Tysons Corner and have greater geographic coverage than the other Metrorail alignments. Therefore, the alignment would have greater potential to foster the high level of development planned in Tysons Corner. However, because the four core stations on Alignment T4 are located on one-way lines, this alignment does not necessarily provide better travel path through Tysons Corner than Alignments T6 and T9. For Alignment T4, many travelers using the one-way stations would be required to transfer and double back to reach the station within walking distance of their destination. Alignment T4 would also have much greater visual impacts than the other alignments.

Given that Alignment T6 would provide the highest ridership with the fewest impacts, the Project Team recommends carrying this Metrorail alignment forward as the LPA.

Table 1-3: Comparison of Metrorail Alignments in Tysons Corner

Measures of Effectiveness	**Alignment T1**	**Alignment T6**	**Alignment T9**	**Alignment T4**
Characteristics				
Profile	Aerial and Underground	Aerial and Underground	Aerial and Underground	Aerial
Length of Underground Section	3,050 feet	5,200 feet	1,150 feet	0 feet
Number of Stations	3	4	4	6
Costs				
Capital Costs (Millions in YOE $)	$2,937.3	$3,101.3	$2,982.6	$3,080.4
Incremental Capital Cost (Millions in YOE $)	Base	+ $164.0	+ $45.3	+ $143.1
Annual Operating Costs in 2025 (Millions in YOE $)	$176.5	$179.4	$179.4	$184.2
Transportation Service Issues				
Daily Ridership (2025)	86,300	86,900	86,900	83,800
New Riders (2025)	37,300	38,300	38,300	36,800
Convenience of Trip	◐	●	●	○
Land Use and Economic Development Issues				
Support for Potential Growth	○	◐	◐	●
Impacts to Proposed Transportation Improvements	●	●	○	●
Commercial Displacements	2	3	6	5
Residential Displacements	0	0	0	0
Environmental Issues				
Visual Effects	◐	◐	○	○
Maintenance of Traffic Issues				
Effects of Cut and Cover Construction on Traffic[1]	◐	◐	○	---

Notes: [1] Cut and Cover is a construction method by which a trench is excavated with temporary walls, the concrete tunnel is built at its base, the trench is filled and the surface restored.

Legend:		
	●	Good
	◐	Fair
	○	Poor

1.2.2 Recommendation for a Service & Inspection Yard Site

In order to supply Metrorail trains for revenue service, the Project requires a large Metrorail Service and Inspection (S&I) Yard for the storage, maintenance, inspection and repairs of Metrorail vehicles. A total of 21 potential sites were studied as candidate locations for the S&I Yard. These sites were selected based on their proximity to the end of the proposed Metrorail alignment. Sites in Loudoun County and on Dulles Airport property were studied. All but three of the 21 sites were eliminated because they were inconsistent with local land use plans and zoning designations or because they contained, or were crossed by, important water resources in Loudoun County and would have resulted in substantial impacts to these resources.

A detailed evaluation of the remaining three sites was conducted for the Draft EIS and is summarized in Table 1-4 below. Based on this evaluation, the Project Team recommends the Yard Site 15, depicted in Figure 1-1, because it would:

- Be the most consistent with existing land use, future land use plans, and existing zoning requirements.
- Have fewer economic development effects in Loudoun County, because it would not interfere with local planned development on Yard Sites 7 and 20.

Although Yard Site 7 has fewer effects to wetlands and streams, it shares certain disadvantages of Yard Site 15, though to a lesser degree: aircraft noise effects on transit workers and potential safety issues related to airport operations. Yard Site 20 is located the farthest from the mainline, requiring more non-revenue lead track and additional operational expenses. Yard Site 15 would cost more to construct and operate than Site 7, but less than Yard Site 20.

In addition, as presented in Chapter 6.0 of the *Public Hearings Report*, the MWAA has stated that it is willing to consider Yard Site 15 on Airport property, provided there are no other reasonable and prudent alternatives. The FAA has indicated for the present moment that Yard Site 15 is an undesirable use of Airport property and that it may have the greatest environmental impacts among the three alternative sites. Given such, FAA has the concern that Yard Site 15 may not satisfy NEPA as there appears to FTA to be a practical alternative yard site. FAA also cites security concerns of intrusion of Yard Site 15 into Airport property and requests that there be concurrence of the Transportation Security Administration (TSA) on Yard Site 15. Furthermore, FAA notes that Yard Site 15 will have its occupied structures outside the approach surface of the proposed future north-south runway, only if there is a 4,000 foot separation between the future and existing runways; the present FAA NEPA study of future runways may recommend a lesser separation, resulting in occupied structures in the approach surface. The Project Team has concluded that Yard Sites 7 and 20 are not practical alternative yard sites that meet the Project's purpose. Elected officials in Loudoun County and the property owner of Yard Site 7 have indicated strong support of Yard Site 15 and a rejection of Yard Sites 7 and 20. As to the airport property location of the yard, the Project Team has determined that, through considered yard siting and construction, including an aerial yard lead, environmental impacts can be minimized, and that Yard Site 15 can be sited on airport property to minimize, if not eliminate, any conflicts of occupied yard structures with existing and future airport runways.Having recommended a preferred yard site, the Project Team will now coordinate with environmental regulatory agencies on the above FAA concern of NEPA, with TSA on its review and concurrence, and with MWAA and FAA on their processes for approval for use, for the conveyance of Airport property and for incorporation of safety and security programs.

Table 1-4: Comparison of Service & Inspection Yard Sites

Measure of Effectiveness	Y7	Y15	Y20
Costs			
Capital Costs (Millions in YOE $)	$277.5	$310.7	$340.5
Annual Cost of Non Revenue Operations (Millions in 2001 $)	$1.30	$2.30	$2.1
Operations			
Ease of Operations	◐	◐	○
Ease of Access to Yard Site	◐	●	◐
Existing and Planned Land Use			
Consistency with Existing Land Use Plans	○	◐	◐
Consistency with Future Land Use Plans	○	●	◐
Compatibility with Existing Zoning Requirements	◐	●	●
Economic Development			
Effects to Local Planned Development	○	●	◐
Natural Resources			
Effects on Floodplains	○	◐	◐
Effects on Wetlands	●	○	◐
Effects on Streams and Water Quality	●	◐	○
Safety			
Aircraft Noise (Effects to Workers)	◐	◐	●
Airport Operations and Safety	◐	◐	●

Legend:		
	●	Good
	◐	Fair
	○	Poor

1.3 RECOMMENDED MITIGATION PLAN

The Project Team has analyzed and documented reasonable alternatives which would avoid or reduce adverse impacts. Overall, the impacts of the Metrorail Alternative are anticipated to be minor, especially given the length and complexity of the Alternative. In response to comments in the public hearing record, the Project Team is recommending the following elements of a mitigation plan.

1.3.1 Noise

With respect to Metrorail operations on the Dulles Corridor line, the Project Team will implement the following mitigation, as described in the Draft EIS:

- 3-foot high parapet or sound barriers along aerial sections of track near residential areas.
- 5-foot high sound barriers in specific locations along both aerial and at-grade sections of track, as identified in the Draft EIS, pending further investigation during preliminary engineering.

With respect to concerns of communities on the potential of highway noise reflecting from the Metrorail structure and its sound barriers onto the communities, the Project Team will analyze this reflection potential upon the selection of a LPA. If the results call for mitigation, the measure may be an acoustically absorptive surface on the exterior of the Metrorail structures. In addition, the Project Team will address the potential of steel box girders of Metrorail aerial structures for emitting unwanted sound effects. If the results call for mitigation, the measure may be internal devices within the girders for dampening the sound emission.

With respect to the concerns of communities on the noise of the Metrorail West Falls Church Yard, WMATA will continue its ten-year effort to address the noise effects of the current train yard operations upon the nearby residential communities with noise abatement measures. The Project Team notes, however, that new residences have been recently constructed and occupied adjacent to the West Falls Church S&I Yard without any noise mitigation provided by the residential developer. If WMATA decides to proceed with noise abatement measures, the WMATA compact member jurisdictions would bear most of the cost of abatement, since this is an existing condition. The Project itself would share in the cost of abatement proportional to the Project's contribution to the future levels of noise. As in the past, there will be coordination among DRPT, WMATA, Fairfax County officials and staff, and representatives of the communities.

With respect to the concerns of communities on the noise of the Dulles Connector Road, the Commonwealth of Virginia will seek to address the existing noise effects upon the residential communities with noise abatement measures. If the Commonwealth decides to proceed with noise abatement measures, it would bear most of the cost of the abatement, since this is an existing condition due mainly to traffic to and from the Dulles Toll Road. The Project itself would share in the cost of abatement proportional to the Project's contribution to the future levels of noise and to its visual effects. There will be coordination among DRPT, VDOT, MWAA, FAA, Fairfax County officials and staff, and representatives of the affected communities.

1.3.2 Visual

With respect to Metrorail aerial structures, the Project Team will employ the design principles of bridge aesthetics. The aerial Metrorail Green Line within the Suitland Parkway is an example of recent application of bridge aesthetics.

With respect to the Metrorail at-grade in the median of the Dulles Airport Access Road, the Project will incorporate landscaping in the new median where possible, as mitigation for the removal of trees and berms in the median. This new landscaping should be the maintenance responsibility of MWAA as operator of the Access Road. There will be coordination among MWAA, FAA, FHWA and VDOT.

With respect to traction power substations (TPSS) and tiebreaker stations (TBS), the Project Team will design these structures to be compatible with any residential or other sensitive environs. Specific sites include the TPSS on the Thoburn Golf Park property, TPSS on Chathams Farm Road, TPSS on the west side of Trap Road with its proximity to the Barns of Wolf Trap, and TBS at the existing Fisher Avenue TPSS. Sites of other TPSS and TBS are within roadway rights-of-way, Airport property, commercial or office developments or undeveloped parcels. There will be coordination with the affected property owners and/or civic associations.

With respect to the Difficult Run Stream Valley Park and the W&OD Railroad Regional Park Trail, both of which are under Metrorail overpasses, the Project will provide light wells and additional lighting for the safety and comfort of park users. Any artificial lighting, which the Project might install, would be the maintenance responsibility of the park owners. There will be coordination with the park owners.

With respect to the visual effects upon Dulles Airport, the Project Team will design the two Metrorail tunnel portals and their security barriers to be compatible with the historic terminal and the surrounding historic district. The Project Team will site the eastern portal tunnel and a traction power substation to avoid interference with view sequence of the historic terminal and district. There will be coordination among SHPO, MWAA, FAA and possibly NCPC.

1.3.3 Roadway Network

Station access has been an important issue in light of the comprehensive planning of the two Counties for mixed-use development at the Metrorail stations. The Draft EIS identifies proposed mitigation measures as part of the traffic analysis. These include intersection improvements and the addition of through lanes. The Project Team will confirm these mitigation measures with VDOT, Fairfax County and Loudoun County during the preparation of the Final EIS and seek their programming in the Commonwealth and regional transportation plans.

1.3.4 Construction Effects

Specific to Tysons Corner, the Project Team will work with TYTRAN, a transportation management association, to develop a business advisory team to provide a forum for affected businesses and communities to participate in the implementation of the Project, particularly the mitigation of the construction effects in Tysons Corner. The business advisory team will include representatives from DRPT, VDOT, WMATA, Fairfax County, Tysons Corner merchants, major property owners, civic associations and utilities. The design-build contractors will be added to the team when the Project enters the construction phase.

General to all sections of the Dulles Corridor, every effort will be made to maintain access to businesses, including pedestrian and vehicular access, during construction periods. Where possible, existing access points (e.g., driveways and building entrances) will be preserved and protected from construction disruption. When construction activities require temporarily moving access points, alternative access will be provided and potential patrons will be directed to these alternatives by prominent signage and well-marked detour routes. Construction priorities will include maintenance of high-visibility business signs, directional signage to parking, and well-marked pedestrian paths.

Moreover, DRPT, WMATA and the design-build contractors will maintain thorough and continuous communication among all public and private stakeholders throughout the implementation of the Project in order to minimize construction effects. This effort will include the location of construction work zones and haul routes.

1.4 CONTINUING COORDINATION

In addition to continuing coordination with residents, business owners, civic associations, agencies, jurisdictions, elected officials and other stakeholders on the recommended mitigation plan during the preparation of the Final EIS, the following continuing coordination is recommended:

1.4.1 Master or Comprehensive Agreements

During preliminary engineering, DRPT will develop master or comprehensive agreements with the following parties, having WMATA as a signatory:

- TRIP II, owner of the Dulles Greenway, a private toll road
- FAA and MWAA, including approval for use of Airport property, conveyance of Airport property and incorporation of safety and security programs, particularly for Yard Site 15.
- Fairfax County
- Loudoun County
- U.S. Department of Interior, National Park Service, for the future Wolf Trap Farm Park Station

In addition, the draft Section 106 Programmatic Agreement among various parties will be made final. Section 106 refers to the federal regulation for historic preservation.

1.4.2 Financial planning and funding

DRPT, the project sponsor, with WMATA support will continue its coordination and development of the capital and operating funding plans, culminating in a final financial plan. The final financial plan will support local funding agreements and the federal Full Funding Grant Agreement.

1.4.3 Safety And Security Programs

The Project Team will incorporate the elements and operation directives of new safety and security programs of WMATA for the Metrorail system and of FAA and MWAA for Washington Dulles International Airport.

1.4.4 Transit-Oriented Development

The Project Team will continue to participate in the efforts of Fairfax and Loudoun Counties and of private stakeholders for the creation of transit-oriented development at the new Metrorail stations. Advanced urban design and friendly pedestrian connections will be the goals of the efforts. In particular, the efforts will include accessibility at the four Tysons Corner stations, Wiehle Avenue Station and Reston Parkway Station. If so requested by the Counties, the Project Team will serve as catalysts among the interested parties.

With respect to air rights development above Metrorail stations, the Project Team acknowledges that the two Counties govern land use and that FAA, MWAA, VDOT and TRIP II, as the owners and operators of the DAAR, DTR and Dulles Greenway, must be involved. Therefore, the Project Team will await any initiative of the two Counties with the involvement of the freeway owners and operators. For efficient structural design, a decision point arrives with preliminary engineering, leading to investment in the final design and construction of the structural support of air rights development within a station's structure.

1.4.5 Station Facilities and Access

For reference within these recommendations, WMATA has established a ranking (in descending order) of priorities for access and proximity to a station: pedestrian and bicycle traffic, accessible route, transit buses, Kiss & Ride (and motorcycles), high occupancy vehicles and park-and-ride. Bicycle lockers and racks are located close to the station entrance. Together these form the station facilities. A station site plan lays out the facilities and identifies the access connections to the public roadway network.

Where so requested, the Project Team will continue to coordinate and develop the site plans of the new Metrorail stations with Fairfax County, Loudoun County, Town of Herndon, Virginia Department of Transportation and private developments. This effort will be in conjunction with the continuing coordination for transit-oriented development, described above. The site plans will advance during the preparation of the Final EIS and the General Plans for the LPA. The design of the station facilities will be made final during preliminary engineering.

Specific site plans under review include, but are not limited to, the following:

- The transit bus and private shuttle bus bays and stops of Tysons Central D Station between the two regional malls.
- The station facilities and access of Tysons West Station, possibly integrated with proposed development at the site of these station facilities. Fairfax County has requested that there be consideration of reducing the amount of parking provided at this station, or elimination or relocation of parking if no acceptable mitigation of the traffic impact of the 2,000 parking spaces is found.
- The northside station facilities and access of Wiehle Avenue Station, in conjunction with a joint development initiative, which the Project Team recommends that Fairfax County or itself pursue. The joint development effort would commence with a solicitation for development proposals, whereby the private sector incorporates the station facilities, including a 2,300-space park-and-ride structure, into a mixed-use development. The cost-sharing by the Project will be determined during the preparation of the solicitation package. A decision point arrives with preliminary engineering.
- The northside bus bays, Kiss-and-Ride and access of Reston Parkway Station.
- The future northside bus bays and Kiss & Ride of Herndon-Monroe Station. The continuing coordination will await the submittal of redevelopment proposals for parcels north of the Dulles Toll Road. Until that time, bus stops along Herndon Parkway and a pedestrian connection will serve as station facility and access; these are depicted in the General Plans, dated June 2002.
- The southside station facilities of Route 28 Station. The station facilities will be reconfigured to attain a more efficient layout yet maintain their avoidance of a wetland.
- The pedestrian connections between the station facilities and the proposed development north of Route 606 Station.
- The northside and southside facilities and access of Route 772 Station, in conjunction with proposed development and with a proposal of Loudoun County for a 3,300 space park-and-ride facility, divided between the two developments on either side of the Dulles Greenway and connected by the planned Transit Connector Road bridge. The park-and-ride facility at Route 606 Station remains unchanged at 4,750 spaces.

1.4.6 Overflow parking and cut-through traffic within City of Falls Church

The Project Team will coordinate with the City of Falls Church on the determination of the Project's effects to the City's streets, specifically any increase in overflow parking and related cut-through traffic.

1.4.7 Metrorail Alignment at Route 123

The Project Team will continue to address the structural concept for the Metrorail oblique crossing of Route 123 between Anderson Road and Colshire Drive in Tysons Corner.

1.4.8 Metrorail Alignment at Capital Beltway

The Project Team will continue the coordination with VDOT on the vertical Metrorail alignment at the Capital Beltway. VDOT seeks to improve the Beltway and to reconfigure the interchange of the Beltway and Route 123. The proposed reconfiguration will require a higher Metrorail alignment and thus increase the capital costs and the visual effects of the Project.

1.4.9 Metrorail Alignment at Route 7, underground section

The Project Team will investigate the optimum horizontal and vertical alignment in order to reduce capital costs by minimizing the depth and length of the cut-and-cover section of the Metrorail alignment parallel to Route 7 in Tysons Corner. This section includes the Tysons Central C Station at Pike 7 Plaza shopping center.

1.4.10 Metrorail Alignment and Dulles Airport Access Road

In combination, the realignment of the Dulles Airport Access Road (DAAR) by the Project and the planned widening of the Road from four to six lanes by MWAA will cause the realignment of the Dulles Toll Road at the Herndon-Monroe Station and at the Route 28 Station. Since the Project Team foresees that the construction of Metrorail will precede the planned widening of the Dulles Airport Access Road, the realignment of the Dulles Toll Road will be part of the MWAA project. The Project Team will coordinate the design of Metrorail with a concurrent MWAA design of the DAAR widening.

1.4.11 Metrorail Alignment at Autopilot Drive

The Project Team will coordinate with FAA and MWAA a minor northward relocation of the portal along Autopilot Drive to Navigation Road within Dulles Airport property.

1.4.12 Traction power substations (TPSS) and tie-breaker stations (TBS)

As discussed under the Recommended Mitigation Plan, the Project Team will re-analyze the spacing, location, size and design of the TPSS and TBS, particularly in any residential or other sensitive environs.

1.4.13 Stormwater management facilities

The Project Team will re-analyze the location, size and design of the stormwater management facilities, including retention ponds and smaller ponds, known as best management practice ponds.

1.5 UNRESOLVED ISSUES

In addition to those Project issues and effects documented in the Draft EIS and the General Plans, both dated June 2002, and in addition to the above recommendations, there are certain unresolved issues that the staffs of DRPT and WMATA bring to the attention of the Commonwealth Transportation Board and the WMATA Board. While resolution of these issues must accompany the development of master or comprehensive agreements, the two Boards should understand the import of each.

1.5.1 TRIP II, Owner and Operator of the Dulles Greenway

The Dulles Greenway is a private toll road, owned and operated by Toll Road Investors Partnership II (TRIP II). Through its Comprehensive Agreement with the Commonwealth's State Corporation Commission, TRIP II will dedicate its 40-foot wide median to the Commonwealth for the Project. Through its Position Statement, dated June 10, 2002, TRIP II has, however, cited numerous issues, some of which are identified and repeated here for their import.

- [Received TRIP II Comment] "[That] TRIP II is properly indemnified and held harmless at all times from costs, claims, and liabilities resulting from the presence on Greenway property of the DCRTP."

From this received comment from TRIP II, the Project Team observes that TRIP II is seeking written monetary indemnity or an assumption of financial responsibilities from the Commonwealth (DRPT) and/or WMATA for any costs of defense, claims of liability, and compensation resulting from the construction and operation of the Metrorail Alternative on the Dulles Greenway Toll Road. The Team observes that this may include certain freeway accidents.

- [Received TRIP II Comments] "[That]:

  (1) TRIP II needs to be reimbursed on a regular (monthly) basis for consulting and engineering expenses incurred, and for the value of management time, for the study, analysis and development of solutions to issues presented by the DCRTP....

  (2) Construction impacts, particularly delay and inconvenience for riders during the construction period and resulting short term (construction period) and long-term (riders [toll road users] find other alternatives) loss of revenues....

  (3) Ensure that real estate, personal property tax, insurance, and other cost increases (if any) encountered by TRIP II that are attributable to the DCRTP and its operations and improvements are properly identified and reimbursed by the DCRTP to the Greenway."

From these received comments from TRIP II, the Project Team observes that TRIP II will strive to obtain additional monetary compensation from the Commonwealth (DRPT) and/or WMATA of certain claimed expenses, cost increases, and lost toll revenues that it may attribute to the construction and operation of the Metrorail Alternative in the mass transit-reserved center median and other rights of way of the Greenway Toll Road.

1.5.2 MWAA, Operator of the Dulles Connector Road, Dulles Airport Access Road and Dulles Airport property

The Federal government is the owner of the Dulles Connector Road, the Dulles Airport Access Road and Dulles Airport property. In 1987, these facilities were transferred to MWAA under a 50-year lease and the Federal government is the owner to the fee, with full reversionary title of the DAAR and its realty when the MWAA lease expires. It is most likely that MWAA will seek that DRPT and WMATA indemnify MWAA for use of these properties, particularly Site 15 in Loudoun County for the service and inspection yard. One consequence is that any loss of life, injury and/or damage to Project property would need to be insured by DRPT and/or WMATA, since there would be no recourse to MWAA nor likely to the vehicle or aircraft operators for compensation.

1.5.3 FAA and MWAA acceptance of DAAR shoulder widths

The General Plans, dated June 2002, depict the Project's realignment of the four-lane Dulles Airport Access Road at the four median stations of Wiehle Avenue, Reston Parkway, Herndon-Monroe (plus maintenance track) and Route 28. The shoulder widths through these sections of realigned lanes are, for the most part, in conformance with the standard widths established by AASHTO. With the planned widening of the Dulles Airport Access Road (DAAR) from four to six lanes by MWAA, the shoulder widths will be less than the standard widths. The widths are especially acute at the DAAR underpasses of the crossroads. To be determined is the party to be responsible for the creation of these widths.

1.6 RECOMMENDED FINAL ENVIRONMENTAL IMPACT STATEMENT

The Project Team recommends authorization of the WMATA Board and the Commonwealth Transportation Board for the preparation of the Final Environmental Impact Statement for the Dulles Corridor Rapid Transit Project. The Final EIS would incorporate the following:

- The selection and evaluation of the Metrorail Alternative with eleven (11) stations, as previously described and depicted in Figure 1.1, on Alignment T6 in Tysons Corner, with the relocation of the portal at the Dulles Airport Marriott, and with Yard Site 15 on Dulles Airport property as the EIS Preferred Alternative.
- The Preferred Alternative would reflect the recommendations for the General Plans, as described above in Section 1.2.
- Changes to the Project that would be the result of determination of mitigation measures and continuing coordination described above in Sections 1.3 and 1.4.

Coordination with property owners and tenants, civic associations, agencies and jurisdictions, elected officials and other stakeholders should continue through the preparation of the Final EIS. The Final EIS should reflect the additional refinements to the Project, which may be generated as a result of this continuing coordination.

Following the approval of the Final EIS by FTA and its issuance of a Record of Decision, the WMATA Board will be requested to approve amendments to the General Plans, which will incorporate the results of continuing coordination and incorporate the mitigation measures included in the Final EIS and Record of Decision and which are within WMATA's purview as defined by the Master Agreements with DRPT and affected agencies.

Attachment A

FINAL RECOMMENDATIONS OF THE PROJECT TEAM
DULLES CORRIDOR RAPID TRANSIT PROJECT
Post-Hearing Conference

The Project Team, comprised of staff from DRPT and WMATA, is recommending the following:

- Relocation of Traction Power Substation #2 to the southwest quadrant of the Magarity Road underpass of the Dulles Connector Road;
- The Option A location of Tie Breaker Station #2; and
- The Option E site plan of Tysons West Station and facilities.

The Team makes these recommendations based on: a) the Technical Memoranda of April 2004, which includes figures that serve as the General Plans, and b) the comments received from 24 individuals during the post-hearing conference process and c) the comments received from 11 individuals during the review period of the *Post-Hearing Conference Report.* Once approved by the DRPT Director and the WMATA Board of Directors, the recommended relocation, location and site plan will formally become part of the Final Environmental Impact Statement (Final EIS) and final General Plans.

These recommended changes will serve to define the location of these facilities for the following:

- The Full LPA and LPA Phase 1 documented and evaluated in the Final EIS,
- LPA Phase 1 now being advanced into Preliminary Engineering and evaluated in the Federal Transit Administration's New Starts process, and
- Amendment to the WMATA Adopted Regional System, as documented by the General Plans.

More detailed information regarding the rationale for these recommendations, proposed mitigation measures, and plans for continuing coordination is provided below.

A. TRACTION POWER SUBSTATION #2

The Project Team recommends the westward relocation of Traction Power Substation #2 to the southwest quadrant of the Magarity Road underpass of the Dulles Connector Road. The new location is undeveloped public land of the Dulles Connector Road but on the residential side of the Road's wooden noise wall. The land is owned by FAA, leased by FAA to MWAA and maintained by VDOT. The driveway of the substation would connect with Olney Drive. WMATA would be responsible for the maintenance of the driveway and of the land within the permanent easement of the substation.

The Draft EIS and Proposed General Plans had depicted the first location of TPSS-2 along the south roadside of the Dulles Connector Road within the existing right-of-way. Vehicular access to TPSS-2 would have been via the Dulles Connector Road. For safety reasons, the Project Team decided to change the access for TPSS-2 and other ancillary facilities from freeway access to local road access. The Project Team further decided to move TPSS-2 westward to the southwest, undeveloped quadrant of the Magarity Road underpass of the Dulles Connector Road in order for the TPSS-2 to be away from the shoulder of the Dulles Connector Road.

That first location would have required the removal of vegetation that screened the Dulles Connector Road from the Olney Road residences. The new location avoids the need to remove existing roadside vegetation but will remove a limited number of trees and shrubs on the undeveloped land of the Dulles Connector Road.

B. TIE BREAKER STATION #2

The Project Team recommends Option A as the location for TBS-2 instead of Options B or C. As identified by the Tuckahoe Recreation Club, Option B would displace its miniature golf course, remove mature trees, claim space that visiting swim teams use during meets, and could possibly be an attractive nuisance for Club members. Consequently, Option B has generated strong opposition from Club officers and membership. Unlike Options A and C, Option B would require the construction of the underground electric cable ducts across residential property. In regards to Option C, it could not be recommended because both Options A and B are 'feasible and prudent' alternatives as defined by the federal law that protects parklands from transportation projects. Additional information on the legal requirements for the use of parklands is provided in the Technical Memorandum.

The Team recommends that a new wooden noise wall surround the TBS-2 for its security, for enhanced community safety and for the aesthetics of the neighborhood. Since TBS-2 would not be visible from the Baldwin Drive neighborhood, it would not receive any architectural treatment. The new wooden noise wall would have doors at the location of the doors of the TBS-2 and the remote train control room. The height of the new wooden noise wall would be sufficient to screen the TBS-2, which has a height of 13 feet above its concrete slab foundation.

As currently planned, the location of the access driveway and any temporary construction easement will be fully within the property of 1836 Baldwin Drive. The centerline of the access driveway will be parallel to the property line between 1836 and 1838 Baldwin Drive. Any construction work area between the completed driveway and the property line will likely be part of the permanent easement.

The position of the Project Team in regard to the material of the access driveway and apron remains the same as in the Technical Memorandum: the driveway and apron might be of alternate materials, such as geo-grid or open concrete block with grass turf in their cells; the type of materials will be determined during preliminary engineering and final design. During the same phases, the drainage of the TBS-2 site, including its driveway and apron, will be addressed. Arrangements for landscaping of the site will be addressed in coordination with affected property owners.

C. TYSONS WEST STATION ENTRANCE AND FACILITIES

The Project Team recommends an Option E for the Tysons West entrance and station facilities. Option E is a viable variant of Option C and is depicted in Figure A-1. Like Option C, Option E has its station entrance at the inbound, east end of the station near Spring Hill Road.

The entrance pavilion at the southside of the station is in the front part of the property currently leased by Rosenthal Honda. The station will have its stair towers for emergency exits on property currently leased by HBL Mercedes-Benz and by HBL Pre-Owned Cars. The station support columns will be upon all three properties. The entrance pavilion, emergency exit stair towers and support columns will displace a limited number of parking spaces and result in alteration of on-site circulation and access for all three businesses.

The bus bays and Kiss & Ride facilities are located between Tyco Road and Spring Hill Road, set back from Route 7. Since the conference, the Project Team convened to reconsider the program requirements of bus bays. The Team reviewed the time between bus departures in the evening peak hour to discern if there might be use of bays by more than one bus route. Thus, by allowing buses to share the same bay, the Team reduced the number of bus bays from ten (eleven in some options) to eight. Unlike other options, the Kiss & Ride fully utilizes the undeveloped County land to the rear of Fire and Rescue Station No. 29. In combination, these two changes allow Option E to have reduced property requirements and fewer business effects.

Option E's initial access at Tyco Road is similar to Option C and would be for access to station facilities only. This roadway and the station facilities would be operated and maintained by WMATA. In response to expressions of interest in having a second access point to the station facilities and in an initiation of a street grid in this area of Tysons Corner, Option E includes a possible, later connection to Spring Hill Road. That connection cannot be advanced at this time due to its proximity to the driveways of Fire Station No. 29.

As summarized in the text and Table A-1 below, the Project Team recommends Option E at Tysons West Station because it would:

- Offer high transit customer convenience and safety and thus best serve the mobility goals of the Project.
- Better facilitate pedestrian and bicycle access, as urged by the Fairfax County Non-Motorized Transportation Committee, the McLean Citizens Association and others.
- Preserve Route 7 frontage for future redevelopment.
- Position the bus bays and Kiss & Ride facilities to better accommodate possible joint development in support of Fairfax County's goals for Transit Oriented Development (TOD) in and around transit stations.
- Allow the future construction of the roadway connection to Spring Hill Road for improved vehicular access.
- Place the access point on Tyco Road at the farthest point possible in order to lessen the effects on the Route 7 intersection.
- Reduce the effects upon the Cherner Automotive Group's operations and avoid the displacement of the business tenants of RMC TYCO, LLC.
- Reduce the property requirements and locate the facilities to improve the potential for redevelopment of surrounding parcels.

However, the current access to a portion of Cherner's existing automotive operations from Spring Hill Road would be closed by Option E, as it was by Option C. Alternative access to the property would be developed in coordination with the property owner during preliminary engineering. DRPT would also continue discussions with the property owner about the most appropriate mechanism for conveying any property needed for the Project.

Table A-1: Comparison of Alternative Site Plans for Tysons West Station

Evaluation Criteria	Option				
	A	B	C	D	E
Access Points	One	One +	One	Two	One +
Property Acquisition and Business Effects	●	●	◐	○	●
Vehicular Access	○	◐	◐	●	◐
Pedestrian and Bicycle Access	○	◐	◐	◐	◐
Transit Customer Convenience and Safety	◐	●	●	○	●
Ability to Accommodate Joint Development	○	◐	●	●	◐
Support of Transit Oriented Development	○	○	●	●	●

Note: With the potential future Spring Hill Road access roadway, Option E would have improved vehicular, pedestrian, and bicycle access.

Legend:		
	●	Good
	◐	Fair
	○	Marginal

Additional information on the evaluation of the various options considered is provided in the Technical Memorandum.

The conference record does include four suggested alternative site plans, which the Team considered but did not develop nor select. There titles are Option D-Alternative 1, Option D-Alternative 2, the 'Modified Urban Station Plan' and Option C-1. All four have long walking distances, especially for bus patrons. The second access point of Option D-Alternative 1 and Option D-Alternative 2, connecting to Spring Hill Road, would need to be treated like that of Option E as a possible future connection, due to the proximity of the driveways of Fire and Rescue Station No. 29. Option C-1 does not allow bus recirculation.

D. MITIGATION MEASURES

The following mitigation measures are recommended to address the effects associated with the facilities:

- **Traction Power Substation #2.** The Project Team will coordinate landscaping with MWAA and VDOT in order to retain the existing visual buffer for the surrounding residential community.

- **Tie Breaker Station #2.** The Team recommends that that a new wooden noise wall surround the TBS-2 for its security, for enhanced community safety and for the aesthetics of the neighborhood. The height of the new wooden noise wall would be sufficient to screen the TBS-2, which has a height of 13 feet above its concrete slab foundation. The driveway and apron of TBS-2 might be of alternate materials, such as geo-grid or open concrete block with grass turf in their cells, if determined practical during preliminary engineering and final design. Arrangements for landscaping of the driveway area would be addressed with the property owner.

- **Tysons West Station Entrance and Facilities.** Affected landowners would receive market value for any property or property rights acquired for the construction and operation of the Project and, if applicable, relocation assistance. The Project will install security fencing and plant landscaping along the east side of the station facilities of Option E in order to establish a buffer for Fire and Rescue Station No. 29.

E. CONTINUING COORDINATION

For Tysons West Station facilities, the Team is aware that the affected property owners may seek to advance redevelopment proposals that include the land proposed for station facilities under Option E. If such a proposal is provided on a timely basis, incorporates the necessary program requirements of the transit facility, and permits the facilities to be in operation upon the station's opening, DRPT would consider this proposal in lieu of the recommended site plan. Coordination with Fairfax County and the property owner on this issue will continue during preliminary engineering.

Fairfax County has formally proposed an Option F in lieu of Option E. Its option would relocate Fire Station No. 29 to a more central location within Tysons Corner and would require the acquisition of the East-West Mortgage office building. This option would have less effect upon the Cherner Automotive Group's operations. If the County development of Option F is timely, the Team may consider this option in lieu of Option E. DRPT will monitor the County's further development of Option F during preliminary engineering and decide whether the schedule for the project's implementation can accommodate this option.

F. FINAL ENVIRONMENTAL IMPACT STATEMENT

The Project Team recommends that the DRPT Director and the WMATA Board of Directors authorize the Project Team to make the above recommendations a formal part of the Final EIS and the final General Plans.

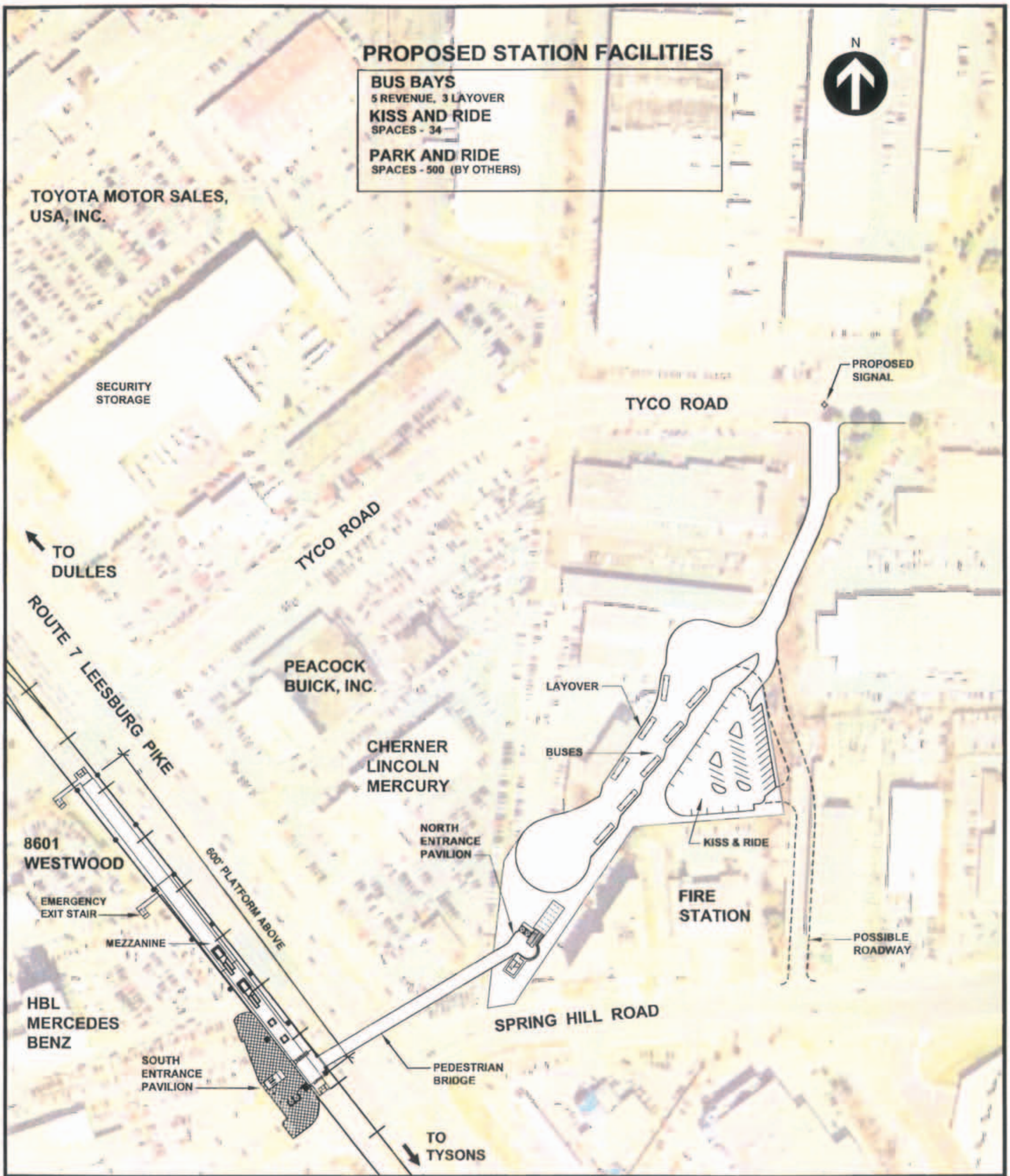


Figure A-1

Tysons West Option E

Dulles Corridor Rapid Transit Project